Vol. 919 Number 4

# OFFICIAL GAZETTE

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UNITED STATES PATENT OFFICE

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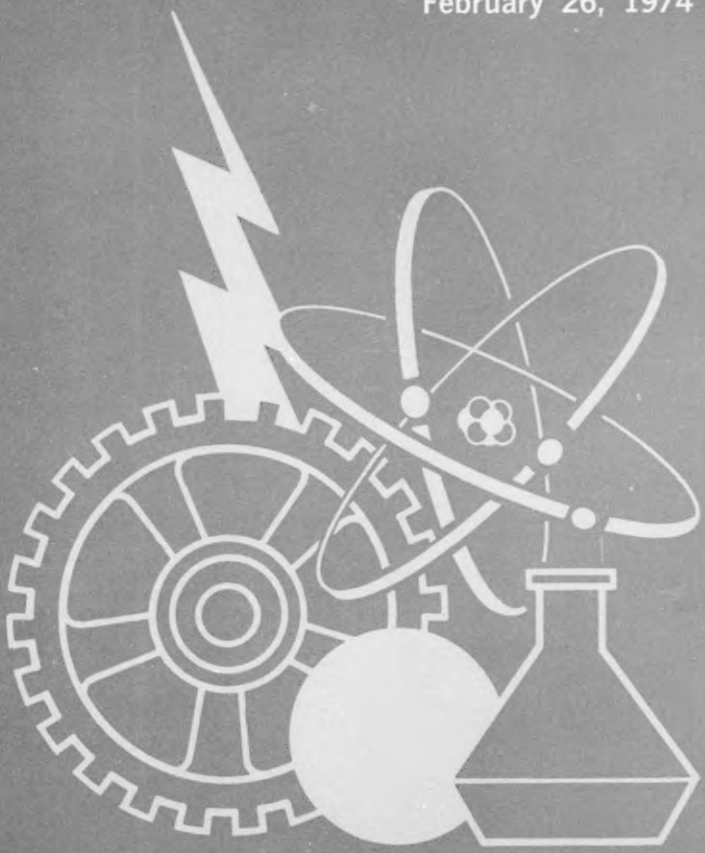
PATENTS

February 26, 1974



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DEPARTMENT
OF COMMERCE

Patent
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

February 26, 1974 Volume 919 Number 4

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# PATENT OFFICE NOTICES

## Hand Delivery of Papers

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

## Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before March 15, 1974.

Buchler, Milton, 9505 Ocala St., Silver Spring, Md. 20901.
Henry, William M., 28 First Ave., Selby-on-the-Bay, Rt. 1, Box 98, Edgewater, Md. 21037
Hull, Robert Byron, 3319 Alabama Ave., Alexandria, Va. 22305
Lidoff, Herbert J., 6433 31st Pl. NW., Washington, D.C. 20015
Montanye, George A., 815 S. 18th St., Apt. 612, Arlington, Va. 22202
Oliff, James A., 8029 Carey Branch Pl., Oxon Hill, Md. 20022
Strachan, Graham, John Labatt Ltd., 451 Ridout St., London, Ontario, Canada
Vanderhye, Robert A., 815 S. 18th St., Apt. 207, Arlington, Va. 22202

LUTRELLE F. PARKER,
*Chairman, Committee on Enrollment.*

## Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

**2,741,416,** G. W. Hileman, CONTAINER; **3,269,640,** E. L. Arneson, same; **3,411,602,** E. G. Mathews, same, **filed** May 4, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1117, *Federal Paper Board Co. Inc.* v. *Field Container Corp.* Pursuant to settlement agreement the Court finds that the patents are valid, cause dismissed, May 15, 1973.

**2,780,611,** T. A. Te Grotenhuis, PIGMENTED SILICONE ELASTOMERS; **3,156,576,** same, ISOCYANATE MODIFIED PIGMENTS, **filed** June 8, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-73-297, *Eastwood Chemical, Inc.* v. *Mamec International, Inc., formerly Master Mechanics Co.* Consent judgment: Patents valid and defendants permanently restrained and enjoined, June 12, 1973.

**3,061,139,** B. Edwards, SELF-VENTING PACKAGE; **3,001,360,** same, NESTABLE CUP; **3,139,213,** same, **filed** Mar. 6, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c481, *Illinois Tool Works Inc.* v. *Foster Grant Co., Inc.*

**3,139,213.** (See 3,061,139.)

**3,156,576.** (See 2,780,611.)

**3,246,336,** Baribo, Porter, Turner and Wright, MOLASSES FEED BLOCKS AND METHOD OF PREPARATION AND USE, **filed** June 20, 1973, D.C., S.D. Ill. (Springfield), Doc. 8-C-73-128, *A. E. Staley Manufacturing Company* v. *M. D. King Milling Company.*

**3,259,349,** E. R. Lee, REAR VIEW MIRROR; **3,372,897,** same **filed** June 6, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1455, *S. H. Leggitt Company, Incorporated* v. *King of the Road Mirrors, Inc. and William A. Panozzo.*

**3,269,640.** (See 2,741,416.)

**3,372,897.** (See 3,259,349.)

**3,403,431,** B. B. Buttler, BOAT ANCHOR, **filed** June 5, 1973, D.C., N.D. Tex. (Dallas), Doc. CA-3-7278-E, *Arthur D. Botvin, doing business as Art-Fin Co.* v. *Okiebug Distributing Co., Inc., Don T. Butler and Ray Scott, doing business as Bass Anglers Sportsman Society.*

**3,411,692.** (See 2,741,416.)

**3,464,424,** F. D. Buzzelli, METHOD FOR RETAINING HAIR, **filed** June 15, 1973, D.C., E.D. Mich. (Detroit), Doc. 72-2181, *Frank Buzzelli* v. *Minnesota Mining & Manufacturing Co.* Per curiam, patent invalid, District Court erred in granting summary judgment; reversed and remanded, June 15, 1973.

**3,528,227,** Lee and Sorrells, PROTECTIVE ANIMAL CAGE COVER; **3,528,390,** C. A. Lee, FILTER TYPE ANIMAL CAGE COVER; **3,613,639,** Lee and Sorrells, ANIMAL CAGE PROTECTIVE COVER AND METHOD OF MAKING SAME, **filed** June 19, 1973, D.C., N.D.N.Y. (Utica), Doc. 73-CV-285, *Maryland Plastics Incorporated* v. *Albany International Corp.*

**3,528,390.** (See 3,528,227.)

**3,613,639.** (See 3,528,227.)

**Plant Patents 3,183,** Jessel and Duffett, CHRYSANTHEMUM PLANT; **3,184,** same; **3,185,** same; **3,189,** same; **3,191,** same; **3,212,** same; **3,214,** same; **3,215,** same; **3,216,** same; **3,220,** same; **3,221,** same; **3,231** same; **3,232,** same; **3,233,** same; **3,236,** same; **3,248,** same; **3,250,** same; **3,254,** same; **3,255,** same; **3,256,** same; **3,257,** same, **filed** Mar. 6, 1973, D.C., S.D. Fla. (Miami), Doc. 73-392-C-JLK, *Yoder Brothers* v. *California-Florida Plant Corp.*

**P.P. 3,184.** (See P.P. 3,183.)
**P.P. 3,185.** (See P.P. 3,183.)
**P.P. 3,189.** (See P.P. 3,183.)
**P.P. 3,191.** (See P.P. 3,183.)
**P.P. 3,212.** (See P.P. 3,183.)
**P.P. 3,214.** (See P.P. 3,183.)
**P.P. 3,215.** (See P.P. 3,183.)
**P.P. 3,216.** (See P.P. 3,183.)
**P.P. 3,220.** (See P.P. 3,183.)
**P.P. 3,221.** (See P.P. 3,183.)
**P.P. 3,231.** (See P.P. 3,183.)
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**P.P. 3,236.** (See P.P. 3,183.)
**P.P. 3,248.** (See P.P. 3,183.)
**P.P. 3,250.** (See P.P. 3,183.)
**P.P. 3,254.** (See P.P. 3,183.)
**P.P. 3,255.** (See P.P. 3,183.)
**P.P. 3,256.** (See P.P. 3,783.)
**P.P. 3,257.** (See P.P. 3,783.)

## Certificates of Correction for the Week of Feb. 26, 1974

| | | | |
|---|---|---|---|
| D. 227,328 | 3,730,509 | 3,748,654 | 3,758,450 |
| 3,644,654 | 3,730,568 | 3,748,836 | 3,758,715 |
| 3,649,347 | 3,731,259 | 3,749,406 | 3,758,847 |
| 3,676,338 | 3,733,562 | 3,750,818 | 3,758,938 |
| 3,677,547 | 3,733,902 | 3,750,861 | 3,759,093 |
| 3,680,851 | 3,734,525 | 3,751,124 | 3,759,465 |
| 3,687,936 | 3,734,851 | 3,752,364 | 3,759,792 |
| 3,689,461 | 3,735,108 | 3,752,483 | 3,759,886 |
| 3,694,264 | 3,735,425 | 3,752,712 | 3,760,345 |
| 3,695,878 | 3,735,926 | 3,752,864 | 3,760,468 |
| 3,702,492 | 3,735,931 | 3,752,922 | 3,760,602 |
| 3,703,596 | 3,736,844 | 3,753,137 | 3,760,837 |
| 3,705,001 | 3,737,542 | 3,753,353 | 3,760,885 |
| 3,706,429 | 3,737,794 | 3,753,791 | 3,761,052 |
| 3,708,302 | 3,738,709 | 3,753,814 | 3,761,156 |
| 3,709,868 | 3,739,420 | 3,754,427 | 3,761,365 |
| 3,714,006 | 3,740,063 | 3,754,629 | 3,761,566 |
| 3,717,103 | 3,740,214 | 3,754,880 | 3,761,661 |
| 3,717,538 | 3,740,357 | 3,755,222 | 3,762,406 |
| 3,717,569 | 3,740,456 | 3,755,338 | 3,762,448 |
| 3,717,673 | 3,742,082 | 3,755,394 | 3,762,451 |
| 3,718,846 | 3,743,729 | 3,755,737 | 3,762,550 |
| 3,718,876 | 3,744,777 | 3,755,759 | 3,762,920 |
| 3,719,418 | 3,746,026 | 3,755,819 | 3,763,079 |
| 3,721,167 | 3,746,519 | 3,756,210 | 3,764,498 |
| 3,721,758 | 3,747,092 | 3,756,845 | 3,764,523 |
| 3,727,191 | 3,747,207 | 3,756,888 | 3,764,781 |
| 3,727,829 | 3,747,944 | 3,756,917 | 3,766,099 |
| 3,728,590 | 3,748,296 | 3,756,979 | |
| 3,729,057 | 3,748,321 | 3,757,447 | |
| 3,729,236 | 3,748,520 | 3,758,421 | |

## Disclaimer

3,627,964.—*Jack Morris*, Monsey, N.Y. LAPPED WELDING OF METAL EDGE PORTIONS. Patent dated Dec. 14, 1971. Disclaimer filed Dec. 21, 1973, by the assignee, *Thermatool Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 9, 12 and 15 of said patent.

## Dedication

3,781,228.—*Robert William McDonnell*, Teaneck, and *Maung Hla Win*, Berkeley Heights, N.J. LAUNDRY PRODUCT CONTAINING ENZYME. Patent dated Dec. 25, 1973. dedication filed Sept. 23, 1973, by the assignee, *Colgate-Palmolive Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

## Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,432,998, D. F. Downey, END CLOSURE FOR DISPOSABLE VACUUM CLEANER DUST BAG, Interference No. 97,682, decided May 23, 1973, claim 1.

Patent No. 3,513,425, R. H. Arndt, MODULAR ELECTRICAL CONDUCTOR TERMINATION SYSTEM, Interference No. 97,875, decided Nov. 30, 1973, claims 1, 2 and 3, 4, 5, 6 and 7.

Patent No. 3,533,600, L. G. Gerson, COMBINATION ROTARY BEATER AND RECIPROCATING KNIFE KITCHEN APPLIANCE, Interference No. 98,313, decided Nov. 20, 1973, claim 6.

Patent No. 3,561,330, S. R. Rich, FLUID OPERABLE MOTOR, Interference No. 97,955, decided Oct. 11, 1973, claims 1, 2, 3, 5 and 6.

Patent No. 3,563,184, J. A. Angelbeck, Jr., PALLET, Interference No. 98,108, decided Oct. 17, 1973, claim 11.

Patent No. 3,567,668, R. Güldenpfenning, METHOD FOR PREPARING AND COMPOSITIONS OF EPOXY RESIN ESTERS PRECONDENSED WITH PHENOPLASTIC OR AMINOPLASTIC RESINS, Interference No. 98,143, decided Nov. 27, 1973, claims 1, 4 and 13.

Patent No. 3,577,475, S. M. Csicsery, ISOMERIZATION OF $C_8$ ALKYL AROMATICS, Interference No. 97,793, decided Aug. 20, 1973, claims 1, 2 and 3.

Patent No. 3,589,094, R. A. Pearson, CARTON LOADING APPARATUS AND METHOD, Interference No. 98,038, decided Oct. 10, 1973, claims 1, 2, 3, 4, 6, 11 and 13.

Patent No. 3,627,060, N. F. Lemmon, DRAFT LINK SWAY CONTROL MECHANISM, Interference No. 98,120, decided Nov. 8, 1973, claim 1.

Patent No. 3,635,960, G. Girell Di Giovanoel and R. Zweidler, PARA-PHENYLTHIDIAZOLYL- AND PARA-PHENYLOXDIAZOLYL DERIVATIVES OF STYRYLBENZOXAZOLES OR OF STYRYLBENZOTHIAZOLES, Interference No. 98,286, decided Oct. 5, 1973, claims 1, 2, 4, 6 and 7.

Patent No. 3,666,167, J. H. Watts, SHIPPING CASE WITH ACCESS OPENING, Interference No. 98,230, decided Nov. 26, 1973, claim 1.

Patent No. 3,683,991, F. H. Ruhland and R. H. Schmidt, IMPROVED TIRE BEAD SEATER, Interference No. 98,216, decided Nov. 27, 1973, claims 1, 7 and 8.

Patent No. 3,464,897, J. C. Jubin, Jr., SEPARATION OF PROPYLENE OXIDE FROM OTHER HYDROCARBONS, Interference No. 97,594, decided Oct. 1, 1973, claims 1, 2, 3, 4, 6 and 7.

Patent No. 3,636,621, R. H. Dammar, LEAD FORMING METHOD, Interference No. 97,972, decided Sept. 10, 1973, claims 5, 6 and 7.

## National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

*Notice of Availability for Licensing*

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
*Patent Program Coordinator, National Technical Information Service.*

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 375,883. Droplet Counter Current Chromatography. Filed July 2, 1973. PC $3/MF $1.45.

Patent application 384,805. Scintillation Analysis System. Filed Sept. 17, 1970. PC $4/MF $1.45.

Patent application 406,870. Concentric Electrode Construction for an Electrocardiogram Transmitter. Filed Oct. 10, 1973. PC $3/MF $1.45.

Patent application 407,532. Thermesthesiometer. Filed Oct. 18, 1973. PC $4/MF $1.45.

Patent 3,740,850. Tertiary Aromatic Amine Accelerators in Dental Compositions. Filed Feb. 2, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,743,088. Diagnostic Device and Method of Treatment. Filed Jan. 18, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,749,913. Renal Scanning Composition and Method Using Technetium 99 m. Filed June 24, 1971. Patented July 31, 1973. Not available NTIS.

Patent 3,775,309. Countercurrent Chromatography With Flow-Through Coil Planet Centrifuge. Filed July 27, 1972. Patented Nov. 27, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW., Washington, D.C. 20240

Patent application 401,003. Preparation of Reverse Osmosis Membranes by Complete Evaporation of the Solvent System. Filed Sept. 26, 1973. PC $3.25/MF $1.45.

Patent application 409,104. Rock Bolt Tension Load Cell. Filed Oct. 24, 1973. PC $3/MF $1.45.

Patent 3,345,272. Multiple Effect Purification of Contaminated Fluids by Direct Gaseous Flow Contact. Filed May 14, 1965. Patented Oct. 3, 1967. Not available NTIS.

Patent 3,608,072. Fish Toxicant Compositions and Method of Using Them. Filed Mar. 21, 1969. Patented Sept. 21, 1971. Not available NTIS.

Patent 3,644,625. Anesthetization of Fish. Filed Mar. 13, 1969. Patented Feb. 22, 1972. Not available NTIS.

Patent 3,657,115. Semipermeable Membranes, Their Use and Method for Preparation Wherein the Membranes Are Stretched During the Initial Gelation Period. Filed Jan. 27, 1971. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,661,634. Semipermeable Osmotic Membrane and Method of Producing Same. Filed Oct. 31, 1969. Patented May 9, 1972. Not available NTIS.

Patent 3,663,692. Methods of Bird Control. Filed Dec. 29, 1969. Patented May 16, 1972. Not available NTIS.

Patent 3,774,759. Separation of Particulate Solids of Varying Densities in a Fluidized Bed. Filed Dec. 16, 1970. Patented Nov. 27, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent 3,592,669. Water Repellent Composition for Coated Optical Glass Surfaces. Filed Apr. 23, 1968. Patented July 13, 1971. Not available NTIS.

Patent 3,592,946. Flexible Amine-Epoxide Resin and the Controlled Temperature Preparation Thereof. Filed Mar. 5, 1968. Patented July 13, 1971. Not available NTIS.

Patent 3,594,415. Tricarballylic Acids. Filed Aug. 30, 1968. Patented July 20, 1971. Not available NTIS.

Patent 3,599,350. Educational Device for Use in Conversion Between Number Systems. Filed Apr. 15, 1970. Patented Aug. 17, 1971. Not available NTIS.

Patent 3,605,007. DC Power Supply Regulated by a Shunt Transistor Whose Bias Voltage Is Varied by Transistor Means To Stabilize Load Voltage. Filed Aug. 5, 1969. Patented Sept. 14, 1971. Not available NTIS.

Patent 3,605,114. Protective Eyeshield for Helmets. Filed Apr. 6, 1970. Patented Sept. 20, 1971. Not available NTIS.

Patent 3,609,855. Production of Beryllium Ribbon Reinforced Composites. Filed Apr. 25, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,077. Thin Film Room-Temperature Electron Emitter. Filed Feb. 26, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,139. Orthogonal Mixer F1F1 Repeater. Filed Feb. 25, 1970. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,776. Crystal Bending Tool. Filed Oct. 22, 1969. Patented Oct. 12, 1971. Not available NTIS.

Patent 3,611,815. Frictionless Gyroscope. Filed Dec. 24, 1969. Patented Oct. 12, 1971. Not available NTIS.

Patent 3,614,992. Sandwich-Type Acoustic Material in a Flexible Sheet Form. Filed May 26, 1969. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,615,896. Metal Surface Primer. Filed July 31, 1969. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,615,928. Growth of $Pb_{(1-x)}Sn_{(x)}Te$ From Nonstoichiometric Melts. Filed Oct. 8, 1969. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,615,949. Crossover for Large Scale Arrays. Filed Nov. 5, 1968. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,619,130. Method of Removing Carbon Dioxide From Gaseous Mixtures. Filed Aug. 27, 1968. Patented Nov. 9, 1971. Not available NTIS.

Patent 3,619,718. Method and Apparatus for Neutralizing Electrostatic Charges on Flowing Liquids. Filed Feb. 20, 1970. Patented Nov. 9, 1971. Not available NTIS.

Patent 3,632,961. Silica-Clay Tooling Material for Welding and Brazing Operations. Filed Nov. 4, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,092. Pulsed Power Supply. Filed July 30, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,174. Memory System Having Self-Adjusting Strobe Timing. Filed Apr. 14, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,634,207. Nickel Etching and Plating Bath. Filed Sept. 4, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,220. Method for Improving Graphite Fibers for Plastic Reinforcement and Products Thereof. Filed Sept. 19, 1968. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,694. Programmed-Response Spectral Scanning Telephotometer System. Filed Mar. 18, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,751. Precision Voltage Regulator. Filed Feb. 1, 1971. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,635,108. Laser-Guided Boring Tool for Deep Hole Boring. Filed Mar. 9, 1970. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,635,801. Nickel Electrodeposition Process for Improving High-Temperature Ductility. Filed Mar. 5, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,635,813. Anode System for Cathodic Protection of Stretched Chain. Filed Mar. 3, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,636,329. Five-Bit Binary to Decimal Translator. Filed Apr. 28, 1970. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,636,380. Power Amplifier. Filed Sept. 4, 1970. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,637,497. Moisture Resistant Dry Film Lubricants. Filed June 12, 1968. Patented Jan. 25, 1972. Not available NTIS.

Patent 3,637,607. Silicon-Containing Polyamide. Filed Feb. 12, 1969. Patented Jan. 25, 1972. Not available NTIS.

Patent 3,661,728. Nickel Plating of Nickel-Copper Printed Circuit Board. Filed Mar. 31, 1971. Patented May 9, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 394,207. Apparatus for Producing High Purity I–123. Filed Sept. 4, 1973. PC $3/MF $1.45.

Patent application 409,990. Automatic Microbial Transfer Device. Filed Oct. 26, 1973. PC $3/MF $1.45.

# PATENT EXAMINING CORPS

## WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF JANUARY 19, 1974

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 1-02-73 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 9-25-72 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 10-11-72 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 1-04-73 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 9-01-72 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 6-13-73 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 9-18-72 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 4-02-73 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 8-16-72 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 2-02-73 |
| DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts. | 4-11-72 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 3-16-73 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 2-26-73 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 3-02-73 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 1-22-73 |
| MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 9-28-72 |

**Expiration of patents:** The patents within the range of numbers indicated below expire during January 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,775,762 to 2,779,941, inclusive
Plant Patents..... Numbers 1,543 to 1,558, inclusive

# REISSUES

## FEBRUARY 26, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

### 27,928

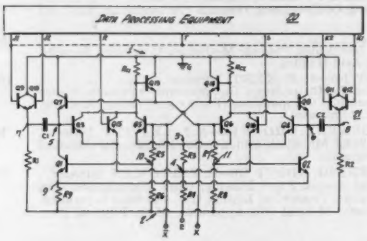
### GATED FLIP-FLOP EMPLOYING PLURAL TRANSISTORS AND PLURAL CAPACITORS COOPERATING TO MINIMIZE FLIP-FLOP RECOVERY TIME

Edwin K. C. Yu, Norristown, Pa., assignor to RCA Corporation

Original No. 3,398,300, dated Aug. 20, 1968, Ser. No. 460,168, June 1, 1965. Application for reissue May 11, 1970, Ser. No. 36,133

Int. Cl. H03k *3/286*

U.S. Cl. 307—247 13 Claims




*A gating arrangement for gating input signals to a bistable multivibrator, or flip-flop. The arrangement includes first and second capacitors for A.C. coupling input signals to set and reset points, respectively, of the flip-flop. In the steady state of the flip-flop, the gating arrangement biases the set and reset points at different values so that the input signal coupled by one of the capacitors is effective to switch the flip-flop. When the flip-flop switches, the gating arrangement provides a further current path for that capacitor.*

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### 27,929

### DEVICE FOR PRODUCING GASEOUS REACTANTS, PARTICULARLY HYDROGEN AND OXYGEN FOR FUEL CELLS

Ferdinand von Sturm and Hans Kohlmuller, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

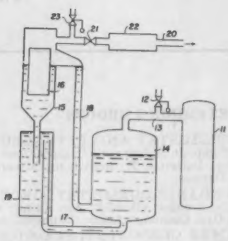
Original No. 3,574,560, dated Apr. 13, 1971, Ser. No. 780,426, Dec. 2, 1968. Application for reissue Aug. 10, 1972, Ser. No. 279,736

Claims priority, application Germany, Dec. 2, 1967, P 16 67 277.8

Int. Cl. B01j *7/02*

U.S. Cl. 23—282 4 Claims

Method of producing gaseous reactants, particularly hydrogen and oxygen, for fuel cells by reaction or catalytic dissociation of liquid or liquid-dissolved substances, with solid substances or solid catalysts, whereby the development of gas is automatically adjusted to the gas consumed. The liquid substance or the liquid-dissolved substance is placed into a storage container which is connected with a sealed gas chamber and also connected, via at least one line, to a reaction tube containing the solid substance or the solid catalyst. Thus when the pressure drops in the reaction tube, the liquid located in the storage container is further compressed into the reaction tube



and when the pressure in the reaction tube rises, the liquid is either completely or partially returned to the storage container.

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### 27,930

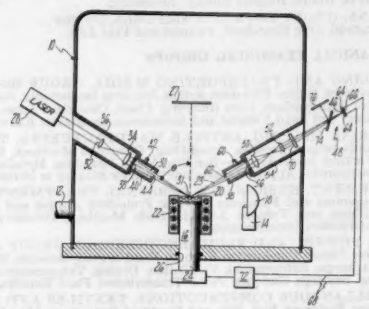
### VACUUM VAPOR DEPOSITION WITH CONTROL OF ELEVATION OF METAL MELT

Randolph D. House, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Original No. 3,574,650, dated Apr. 13, 1971, Ser. No. 806,956, Mar. 13, 1969. Application for reissue Jan. 31, 1972, Ser. No. 222,012

Int. Cl. C23c *13/02, 13/12*

U.S. Cl. 117—106 7 Claims




In the processes for forming protective coatings on metal substrates, particularly the nickel-base and cobalt-base superalloys, by melting a coating material to cause vaporization thereof, a monochromatic light beam is utilized in sensing and controlling displacement of the surface elevation of the melt.

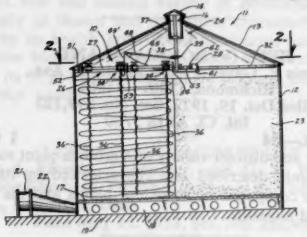
## 27,931
## APPARATUS FOR AERATING STORED GRAIN

Eugene G. Sukup, Dougherty, Iowa 50433

Original No. 3,584,842, dated June 15, 1971, Ser. No. 861,685, Sept. 29, 1969. Application for reissue June 14, 1972, Ser. No. 262,835

Int. Cl. B01f 7/00

U.S. Cl. 259—102 16 Claims



An apparatus for aerating grain stored in an enclosure by mechanically moving a stirring apparatus therethrough. The apparatus comprises a vertically disposed element which is rotatably mounted on a carriage movable itself back and forth on a flightless, smooth tubular member which is rotated about its own axis as it is moved over the stored grain. The tubular member is supported above the grain by means connected to the enclosure and a motor is provided for both rotating and moving the tubular member.

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## 27,932
## OUTBOARD MOTOR TILTING MECHANISM

Donald R. Mettetal, Jr., Livonia, Mich., assignor to Andrew F. Wintercorn, trustee, Rockford, Ill.

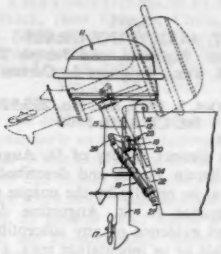
Original No. 3,406,652, dated Oct. 22, 1968, Ser. No. 748,363, July 14, 1958. Application for reissue Oct. 1, 1969, Ser. No. 33,539

(Filed under Rule 47(b) and 35 U.S.C. 118)

Int. Cl. B63h 5/12

U.S. Cl. 115—41 HT 31 Claims

*Hydraulic piston and cylinder means (or power operable screw and nut means) pivotally connected at opposite ends between the transom of the boat and an outboard engine that is pivotally mounted on the transom, usually only for angle adjustment to a fixed setting, is tiltably adjustable quickly by power in either direction to a desired angle usually for "trimming" the engine but occasionally for docking or beaching a boat in shallow water or to enable operating safely at less than usual depth through a weed bed.*



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## 27,933
## PHOTOGRAPHIC MATERIAL FOR THE SILVER DYE BLEACHING PROCESS

Heinrich Bruengger, Basel, and Carlo Boragine, Fribourg, Switzerland, by Ciba-Geigy AG, Basel, Switzerland, assignee

No Drawing. Original No. 3,635,716, dated Jan. 18, 1972, Ser. No. 852,075, Aug. 21, 1969. Application for reissue May 10, 1973, Ser. No. 360,245

Claims priority, application Switzerland, Aug. 26, 1968, 12,771/68

Int. Cl. G03c 1/72

U.S. Cl. 96—99 10 Claims

Photographic material for the silver dyestuff bleaching process is provided which contains in at least one silver halide emulsion layer a bleachable azo dyestuff as image dyestuff and an asymmetrically substituted thiocarbocyanine as red sensitizer. Unexpectedly high relative sensitivities are achieved with these sensitizers which may have a betainelike structure, especially in the presence of polyazo dyestuffs.

# PLANT PATENTS

## GRANTED FEBRUARY 26, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

### 3,491
### ST. AUGUSTINE GRASS

Curran L. Garrett, Ingleside, and Joseph T. Mahoney, Corpus Christi, Tex., assignors to Curran L. Garrett, Ingleside, Tex.

Filed Oct. 2, 1972, Ser. No. 293,921
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of St. Augustine grass, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of superior tolerance to St. Augustine decline virus (SADV), with no evidence of any susceptibility thereto in either field trials or in inoculation tests, a pleasing attractiveness for lawn plantings, an ability to be easily propagated from stolons, a relatively fast growing habit, although somewhat slower than Texas common, good hardiness to temperatures as low as 13° F., an exceptionally long internode length, and distinctive purpose stigmas, with white filaments toward the base.

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### 3,492
### ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Oct. 4, 1972, Ser. No. 294,993
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—18 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its dark, glossy foliage; vigorous, upright habit of growth; Camellia rose flower color with the reverse of the petals being Dawn pink.

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### 3,493
### HEBE (VERONICA) PLANT

Louis E. Gavello, 3436 Maricopa Ave., Richmond, Calif. 94804

Filed Oct. 19, 1972, Ser. No. 298,864
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of Hebe (Veronica) plant substantially as illustrated and described and characterized as to novelty by

(a) Low growing, trailing ground cover type plant
(b) Profuse flowers of color "Campula Blue" covering the entire plant
(c) Its long and repeated blooming period, and
(d) Its resistance to weather and diseases.

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### 3,494
### HEBE (VERONICA) PLANT

Louis E. Gavello, 3436 Maricopa Ave., Richmond, Calif. 94804

Filed Oct. 19, 1972, Ser. No. 299,121
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of Hebe (Veronica) plant, substantially as illustrated and described and characterized as to novelty by:

(a) the compact mounding form of the plant having a low height and a spread greater than its height
(b) the distinct bluish color of the profuse flowers covering the tips of the foliage
(c) the long and repeated blooming period
(d) its resistance to weather and disease
(e) its moderate growth and controlled habit making it suitable for garden ornament as massed blue flowering shrubs.

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### 3,495
### HEBE (VERONICA) PLANT

Louis E. Gavello, 3436 Maricopa Ave., Richmond, Calif. 94804

Filed Oct. 19, 1972, Ser. No. 299,122
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of Veronica plant substantially as herein described and characterized by its large blossoms as compared to its parent plants and the pansy color of said blossoms.

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### 3,496
### APPLE TREE

Floyd Blount, 10941 Beauty Lane, Dallas, Tex. 75229

Filed Oct. 26, 1972, Ser. No. 300,899
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 1 Claim

A new and distinct variety of apple tree of the golden delicious type which is more highly productive and at an earlier age than other varieties of golden delicious apple and which produces fruit of a size and quality superior to other varieties of golden delicious apple. The leaves which are unlike those of other apple varieties are arranged to give a good mix of shade and sun to withstand the hot summers of the Southwestern United States and are large, dark green, and leathery, with a tendency to have deeply serrated edges. The tree and fruit grow extremely well in the climate of the Southwestern United States and are particularly well adapted to the hot dry summers of Texas and Oklahoma. The fruit is more disease resistant than other varieties of golden delicious apple and is not course and pithy as are other golden delicious varieties grown in the Southwest United States.

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### 3,497
### IVY PLANT

Milton C. Ballas, North Plainfield, N.J., assignor of a fractional part interest to Anastasia C. Ballas

Filed Nov. 2, 1972, Ser. No. 303,020
Int. Cl. A01g *5/00*
U.S. Cl. Plt.—67 1 Claim

1. A new and distinct variety of ivy plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the production of vines which grow from 3 to 5 or more feet in length if not cut back, said vines being full and plush at the top and attractively cascading from the base in irregular shapes, a vigorous and rapid-growing rooting habit, and the ability to be propagated readily and easily from rooted cuttings, distinctive and attractive leaves which are relatively round in general shape but having five lobes, said leaves being about two inches in diameter when mature and being symmetrical on both sides of the vines, with tiny clusters of small leaf offshoots breaking at the base of each large leaf and which tend to give the vine a very compact appearance, a tendency of the leaves to curl when exposed to full sunlight, and a distinctive and attractive leaf color which sometimes is practically all yellowish white at first, but which changes as the leaves develop and mature to ivory white at the edges and moderate yellow green over the

central area, and finally to a semi-glossy dark yellowish green color with an ivory white border when fully mature.

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3,498
GERANIUM PLANT
Frank Andrea, 390 N. Franklin St., Holbrook, Mass. 02343
Filed Apr. 7, 1972, Ser. No. 242,147
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of geranium plant, substantially as shown and described, characterized particularly by its health growth; its continuous and exceptionally free blooming habits; its large and double flowered truss; its large florets with double petalage and distinctive red color combination.

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3,499
CHRYSANTHEMUM PLANT
Barrie J. Machin, Chichester, and G. B. Hall, Ashley Green Chesham, England, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed May 11, 1972, Ser. No. 252,498
Int. Cl. A01h 5/00
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of daisy form chrysanthemum characterized particularly as to its uniqueness when compared to Florida Marble by its pale yellow to off-white color, it's approximately one-fourth inch smaller flower, and it is approximately two inches less vigor.

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3,500
CHRYSANTHEMUM PLANT
Grace H. Mack, New Canaan, Conn., and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Grace H. Mack, New Canaan, Conn.
Filed May 15, 1972, Ser. No. 253,640
Int. Cl. A01h 5/00
U.S. Cl. Plt.—75 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar White Grandchild by its flowers which are approximately 2½ inches to 3 inches larger in diameter, and which are more ivory white in color, and do not pink with age; by its growth habit which produces flowerng plants which are approximately three inches shorter in height and which average three more breaks per plant when flowered naturally as field grown plants from plantings made in mid-June and given a single pinch; and by its foilage, which is lighter green in color and which is more coarsely indented and more moderately serrated.

# PATENTS

GRANTED FEBRUARY 26, 1974

## GENERAL AND MECHANICAL

**3,793,643**

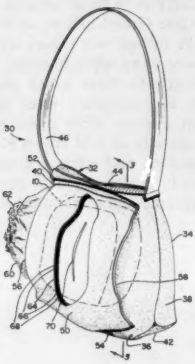
**CARRIER FOR PORTABLE HEATER**

**Joseph Kinoshita, Los Angeles, Calif., assignor to Underwood Rivers Company, Inc.**

**Filed Jan. 17, 1972, Ser. No. 221,334**

**Int. Cl. A61f 7/06**

**U.S. Cl. 2—66** **8 Claims**



A carrier is provided for a portable heater, the heater comprising a solid combustible fuel element and an air permeable incombustible casing, said carrier being in the form of a bag of air pervious material having a zippered opening, and a flap secured to an outer wall of the bag at the upper and lower margins, leaving hand openings at either end. The openings may be provided with sleeves, and the flap-covered outer wall may have a slit to provide access to the bag interior.

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**3,793,644**

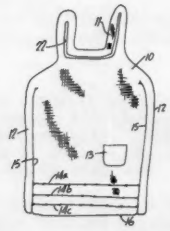
**DISPOSABLE APRON**

**Irving Kellner, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.**

**Filed Aug. 18, 1972, Ser. No. 281,745**

**Int. Cl. A41b 13/10**

**U.S. Cl. 2—49 R** **5 Claims**



A disposable apron of non-woven textile, plastic, or paper material, which is formed in continuous lengths of sheeting and with the individual apron separated along perforated or other tear-off lines to form the individual aprons of the desired length. The neck strap and tie straps of the apron are formed of the integral material of the apron body, by means of appropriate tear lines or cuts in the sheeting.

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**3,793,645**

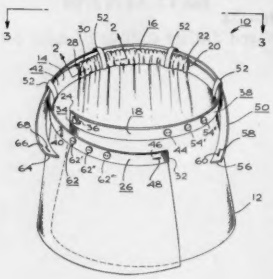
**ADJUSTABLE WAIST BAND ARRANGEMENT**

**Gloria C. Kadison, P.O. Box 626, Thousand Oaks, Calif. 91360**

**Filed Oct. 16, 1972, Ser. No. 297,592**

**Int. Cl. A41d 1/14**

**U.S. Cl. 2—221** **7 Claims**



An improved adjustable waist band arrangement for providing a garment adjustable to fit all sizes within a predetermined range and still provide a tailored, finished appearance. The adjustable waist band arrangement is provided with a waist encircling band having a resiliently stretchable back portion. A pair of front portions of the band are coupled to each of the ends of the stretchable back portion. The front portions are adapted to be positioned in the front of the waist of the wearer in an overlapping arrangement. Restraining means are provided for holding the over-lapped front portions detachably together. The waist encircling band may be coupled to, for example, a skirt. A nonstretchable belt means extends around the back portion of the waist encircling band and has ends that are detachably fastenable by, for example, a plurality of buttons, to the pair of front portions. Depending upon the waist size of the wearer, the buttons to which the nonstretchable belt means is detachably fastened are selected to provide a comfortable fit. The resiliently stretchable back portion of the waist encircling band allows the waist encircling band to stretch to fit any desired waist size.

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**3,793,646**

**WORK TROUSERS**

**Hermann Tempelhof, La Favorite, 2016 Cortaillod, Switzerland**

**Filed Nov. 2, 1972, Ser. No. 303,186**

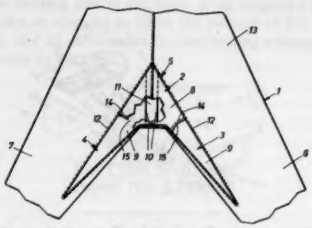
**Claims priority, application Switzerland, Nov. 11, 1971, 16414/71**

**Int. Cl. A41d 1/06**

**U.S. Cl. 2—227** **8 Claims**

The invention is directed to work trousers which are pro-

vided with effective ventilation by inserting a gusset on the



inner side of the leg pieces of the work trousers, which gusset is constructed to provide two vent channels in the gusset.

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**3,793,647**

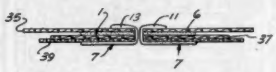
**PRE-CONSTRUCTED BUTTONHOLE AND METHOD OF INCORPORATING SAME IN A GARMENT**

**Mary Ann Spetz, 5675 Farcier Ct., Utica, Mich. 48087**

**Continuation-in-part of Ser. No. 141,293, May 7, 1971, Pat. No. 3,701,167. This application Aug. 2, 1972, Ser. No. 271,559**

**Int. Cl. A41f 1/02**

**U.S. Cl. 2—266** **13 Claims**



A pre-constructed buttonhole consisting of components independent of an article to which they are to be attached, and a method for incorporating the components into a material to form a finished buttonhole. The components consist of a reinforcing piece disposed on the surface opposite the exterior finished surface of the article, and buttonhole piece assembly comprised of buttonhole pieces having tab-portions disposed on the finished surface of the article. A slit is made which extends through the reinforcing piece and layers of material composing the article. The tab portions of the buttonhole pieces, which comprise the buttonhole piece assembly, are inserted through this slit to the exterior finished surface of the article and affixed thereto to form a buttonhole.

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**3,793,648**

**BULLET-RESISTING ARMOR**

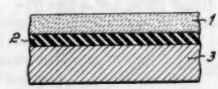
**Erhard Dorre, and Manfred Nussbaum, both of Plochingen, Germany, assignors to Feldmuhle Anlagen- und Produktiongesellschaft mit beschrankter Haftung, Duesseldorf-Oberkassel, Germany**

**Filed Dec. 15, 1972, Ser. No. 315,422**

**Claims priority, application Germany, Dec. 17, 1971, 2162701**

**Int. Cl. F41h 1/02**

**U.S. Cl. 2—2.5** **10 Claims**



Laminar plates having an outer layer of hard, polycrystalline, sintered ceramic backed by an aluminum alloy layer resist the passage of bullets and like projectiles as well as much heavier steel armor or heavier armor having a similar ceramic outer layer over a steel base. An intermediate rubber layer permits a reduction in the thickness of the aluminum layer and a corresponding reduction in overall weight at equal protection. Armored vests in which small laminar plates are held in pockets in overlapping relationship are a prime field of application.

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**3,793,649**

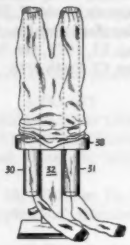
**PROCESS FOR PREPARING LADIES' SEAMLESS PANTYHOSE**

**Robert M. Matthews, Pittsboro, and Albert W. Petty, Siler City, both of N.C., assignors to Kellwood Company, St. Louis, Mo.**

**Filed Sept. 18, 1972, Ser. No. 289,837**

**Int. Cl. A41b 9/04**

**U.S. Cl. 2—224 R** **4 Claims**



Pantyhose are formed from two circularly knitted blanks of which the toes have been left unsewn, by an operation wherein the upper portions of the blanks are slit and sewn and then, without turning the entire garment inside out, the garment is slipped over a pair of suction tubes in close proximity to the sewing machine on which the panty portion has been sewed, and suction applied to pull the toe portions through and out of the ends of the tubes in inside-out condition for sewing of the toes which then can be pulled out of the tubes by sliding the leg portions back along the tubes until the toes have been turned to their original position, and then the entire garment slid forwardly off the tubes; thus greatly expediting the operation. The blanks may be dyed and scoured at a boil in advance of these operations.

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**3,793,650**

**PROSTHETIC BONE JOINT HAVING A SPACER DEVICE**

**Robin Sydney Mackwood Ling, Teignmouth, and Alan John Clive Lee, Exeter, both of England, assignors to National Research Development Corporation, London, England**

**Filed Sept. 22, 1972, Ser. No. 291,161**

**Claims priority, application Great Britain, Sept. 24, 1971, 44709/71**

**Int. Cl. A61f 1/00**

**U.S. Cl. 3—1** **2 Claims**

The intramedullary or equivalent stem of a prosthetic bone joint device is uniformly spaced within a bone canal during implantation using gap-filling cement. This achieved by using a

spacer device having an annular base with at least three spring members extending from spaced points around the base, the spring members extending in a direction having radially outward and common axial components relative to the base. The base is formed to engage around and partway along the stem with its spring members facing forward. When the stem/spacer combination is implanted the springs act to centralise the position of the stem.

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**3,793,651**

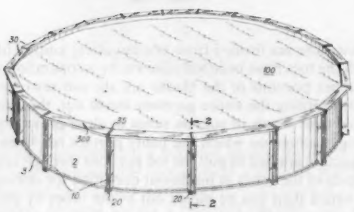
**PORTABLE SWIMMING POOL**

**Joseph J. Pitti, Wantagh, Long Island; George A. Tassone, Brooklyn, and Benjamin Davidoff, Hartsdale, all of N.Y., assignors to Atreo Manufacturing Co., Inc., Brooklyn, N.Y.**

**Filed Aug. 23, 1971, Ser. No. 173,802**

**Int. Cl. E04h** *3/16, 3/18*

**U.S. Cl. 4—172.19** **16 Claims**



A portable pool for erection on any suitable level surface includes an impermeable liner of plastic material for the retention of water, a continuous thin metallic wall for defining the shape of the pool, circular or oval, reinforcing beads for the top and bottom edges of the side-wall, vertical columns equally spaced around the circumference of the wall and rigidly interconnecting the top and bottom reinforcing beads, and a top rail for resisting the hoop stresses induced by the hydrostatic action of the water mass contained inside the liner. In oval pools additional tension members interconnect pairs of columns near their bottom ends to resist the unbalanced loads on the linear portions of the circumference and external buttresses aid in transmitting these loads to the top rail. Hold-down plates bearing some of the weight of the contained water aid in stabilizing and anchoring the wall of the pool.

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**3,793,652**

**ELECTRICALLY NON-CONDUCTIVE HOSPITAL BED**

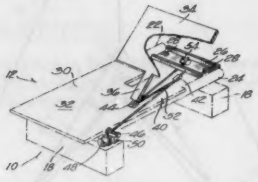
**John H. Linehan, 6028 N. Santa Monica Blvd., Whitefish Bay, Wis. 53217, and Stanley V. Jaskolski, N76W22144 Chestnut Hill Rd., Sussex, Wis. 53089**

**Filed May 24, 1972, Ser. No. 254,783**

**Int. Cl. A61g** *7/00*

**U.S. Cl. 5—63** **9 Claims**

An electrically safe hospital bed comprises a pair of independently operable mechanical jacks which include electrically non-conductive, pivotally interconnected links and which are spaced apart to define an unobstructed region



therebetween to permit access by X-ray equipment. An electrically non-conductive, X-ray transparent mattress support platform is mounted on these jacks.

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**3,793,653**

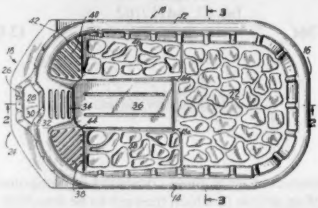
**ONE-PIECE PLASTIC POOL**

**Bertram Brooks, Yonkers, N.Y., assignor to Carolina Enterprises, Inc., Tarboro, N.C.**

**Filed May 17, 1972, Ser. No. 254,048**

**Int. Cl. E04h** *3/16, 3/18*

**U.S. Cl. 4—172** **4 Claims**



A one-piece plastic pool having a slide for enabling a child to descend to the bottom of the pool. Means is provided integral with the pool for enabling a child positioned on the bottom of the pool to position himself at the top of the slide without leaving the pool.

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**3,793,654**

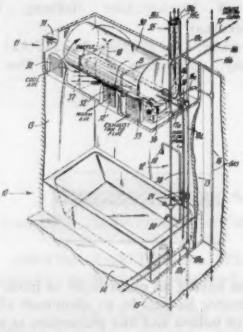
**COMBINATION BATHTUB AND WATER AND SPACE HEATING UNIT**

**Helm Roberts, 217 N. Upper St., Lexington, Ky. 40507**

**Filed July 14, 1971, Ser. No. 162,434**

**Int. Cl. A47k** *3/00;* **F24h** *6/00*

**U.S. Cl. 4—179** **6 Claims**



The invention relates to the combination of a conventional bathtub, and a combined space heating and water heating unit mounted directly above the bathtub to provide hot water for

use with the bathtub, and to provide heated air for heating the room in which the bathtub is located. The combined water and space heating unit is enclosed in an insulated enclosure and includes an opening to allow the passage of hot air to the bathroom, and an exhaust fan for conducting exhaust air from the bathroom to the vent.

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**ERRATUM**

For Class 5—63 see:
Patent No. 3,793,652

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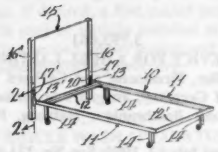
**3,793,655**
**ENDBOARD ATTACHMENT MEANS**

George M. Harris, and Wilbert E. Behnke, both of Chicago, Ill., assignors to Harris-Hub Company, Inc., Harvey, Ill.

Filed Aug. 21, 1972, Ser. No. 282,410
Int. Cl. A47c *19/00*
U.S. Cl. 5—296 11 Claims



An improved bed assembly includes a pair of parallel side rails, a headboard extending perpendicularly between the side rails, and a hook assembly for each side rail for joining the side rails with the headboard. The headboard is provided with respective pairs of support pins recessed beneath the headboard surfaces for engagement with a respective hook assembly. The hook assembly includes a bracket having a vertical plate secured at one side to the end of the rail and having an offset portion at its other side extending perpendicularly from the plate, and which presents a planar surface outwardly of the bracket. A hook plate is carried upon the bracket plate by means of a pair of rivets anchored in the hook plate and inserted through respective slots in the bracket plate inclined to the offset bracket portion at the same angle to maintain the hook plate in sliding engagement with the bracket plate. A portion of the hook plate protrudes through an elongated vertical slot in the offset portion and is formed into a pair of hooks by slots inclined to the offset portion in an opposite sense from the bracket plate slots. The hook portions engage the headboard pins and the vertical surface of the offset portion becomes urged under loading into abutting engagement with the confronting headboard surface to form a rigid joint.

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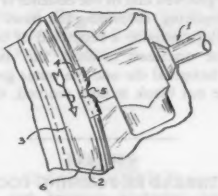
**3,793,656**
**WHEEL WEIGHT TOOL**

Hubert D. Songer, and Warren E. Carter, both of Murfreesboro, Tenn., assignors to Perfect Equipment Corporation, Murfreesboro, Tenn.

Filed Sept. 7, 1971, Ser. No. 177,958
Int. Cl. B25f *1/00*; B23p *19/04*
U.S. Cl. 7—8 6 Claims

A tool for removing and installing wheel weights is provided designed to permit utilization of the tool in a variety of situations including use where the tire and wheel are mounted on an axle of a vehicle. The components of the tool are mounted on a handle and the tool is constructed so that those components are replaceable whenever normal wear or breakage destroys their effectiveness. The tool has a prying means and a spanner removably mounted on one end of an elongated handle portion. The prying means and spanner are adapted to remove wheel weights quickly and effectively in one motion of the tool.



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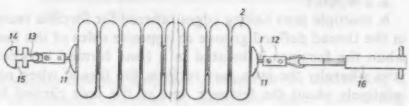
**3,793,657**
**DEVICE FOR SEPARATING THE LANES IN A SWIMMING POOL FOR SWIMMING RACE**

Povl Kaas, Albertslund, Denmark, assignor to Svejsa A/S, Strand, Denmark

Filed May 30, 1972, Ser. No. 257,909
Claims priority, application Denmark, May 28, 1971, 2627/71
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R 5 Claims



A device for separating the lanes in a swimming pool for swimming race and comprising a cable carrying floats shaped as solids of revolution having a hub provided with an axial through-going hole for the cable and with a concave spherical support surface at one end and a convex spherical support surface at the opposite end, the middle portion of said hub being connected to a surrounding water breaking peripheral portion having a smaller axial extent than the hub.

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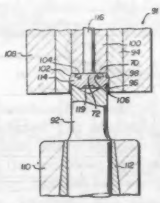
**3,793,658**
**METHOD OF FORMING A FASTENER**

Harold A. Ladouceur, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed June 3, 1971, Ser. No. 149,518
Int. Cl. B21k *1/70*
U.S. Cl. 10—86 F 10 Claims



The method disclosed herein is suitable for forming a fastener having a panel receiving re-entrant groove, such as a piercing nut or fastener having a central pilot portion and a surrounding groove which is restricted at the open end. The

method includes impacting the pilot or piercing face of nut blank with a punch having an annular protrusion forming the central pilot portion and a surrounding groove having parallel side walls. The grooved end of the fastener is then forced into a tapered die opening, deforming the outer side wall of the groove inwardly to provide a restricted or re-entrant groove opening. In the disclosed method, the nut blank is first deformed in a hexgonal die and the outer groove wall is also hexagonal. The nut blank is then pierced, through the pilot portion.

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**3,793,659**

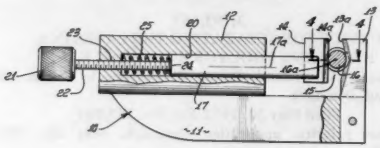
**THREAD RE-FORMING TOOL**

**Lawrence E. Edgar, 961 E. Bennett, Glendora, Calif. 91740**

**Filed May 16, 1972, Ser. No. 253,792**

**Int. Cl. B23g** *5/00*

**U.S. Cl. 10—1 B** **4 Claims**



Apparatus for re-forming the thread of a fastener defining as an axis, comprises

a. a support

b. multiple jaws having edges tapered for forcible reception in the thread defined groove at opposite sides of the fastener when the fastener is located in a zone formed between the jaws whereby the jaws may re-form the thread when rotated relatively about the fastener, one of the jaws carried by the support,

c. and means on the support mounting another of the jaws for adjustment along another axis extending generally toward said one jaw but eccentrically relative to the fastener axis, and for rotation about said other axis to fit the thread groove for thread re-forming.

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**3,793,660**

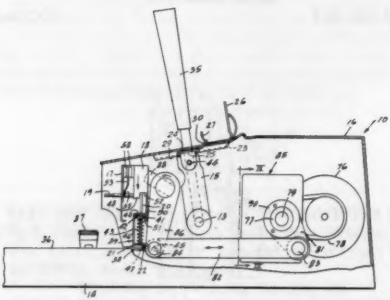
**BOOKBINDING AND POWERED PUNCH MACHINE**

**Raymond E. Sims, Round Lake Beach, Ill., assignor to General Binding Corporation, Northbrook, Ill.**

**Filed Oct. 31, 1972, Ser. No. 302,584**

**Int. Cl. B42c** *19/00*

**U.S. Cl. 11—1 AC** **8 Claims**



This invention provides a combination bookbinding and power punch machine for punching and binding sheets of paper into a book with a plastic binding edge. The bookbinding machine comprises a frame having a base, a row of punches mounted on the frame for vertical movement with respect to the base thereof and corresponding cooperating apertures spaced in the frame beneath the punches, a pressure bar disposed above the punches and mounted on the frame for vertical movement with respect to the punches, power means arranged for cooperation with the pressure bar for vertically moving the pressure bar in a punching and return direction. There are provided a stationary comb which extends upwardly from the frame and is spaced from the row of punches, and a slide member having uncurling fingers extending therefrom along the upright comb, the slide member being arranged to move transversely with respect to the frame along the comb and longitudinally of the frame toward and away from the comb. An adjustable punching back gauge plate is provided with adjustment means mounted on a common shaft to adjust both the position of the punching back gauge plate to correspond with the depth the holes are to be punched along the border of the sheets to be bound, and the movement of the slide member to correspond with the diameter of the binding element by which the punched sheets are to be bound.

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**3,793,661**

**GRIPPER DEVICE FOR A HEEL-LASTING MACHINE**

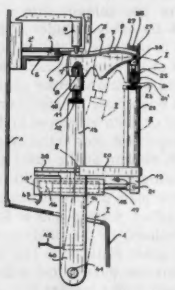
**Herbert Schindler, Pirmasens, and Gerhard Winter, Hauenstein, both of Germany, assignors to Firma Schoen & Cie Gesellschaft mit Beschrankter Haftung, Pirmasens, Germany**

**Filed July 12, 1972, Ser. No. 271,023**

**Claims priority, application Germany, July 19, 1971, P 21 35 951.3**

**Int. Cl. A43d** *23/00*

**U.S. Cl. 12—14.5** **9 Claims**

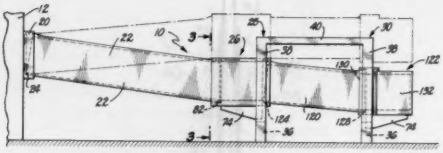


A gripper device in a heel-lasting machine, for tightly stretching a leather shank on a last, having a pair of box members disposed on opposite sides of a bracket member for supporting the last. Each box member has a set of upper and lower jaw members for gripping the shank. At least one arcuate groove is provided in each of the box members for directing movement of each respective set of jaw members along a curved path directed upwardly and outwardly away from the last defined by its gripping points. A mechanism is associated with each set of jaw members for moving each set along its respective path to stretch the shank gripped between the sets. Another mechanism moves the gripper device longitudinally along the last for stretching the shank to closely follow a surface of a heel part of the last for moulding thereon.

3,793,662
## AIRCRAFT LOADING BRIDGE

Peter T. Gacs, Palos Verdes Peninsula, and Lucien C. Williams, Palos Verdes Estates, both of Calif., assignors to Foremark Corporation, Gardena, Calif.

Filed Mar. 1, 1972, Ser. No. 230,829
Int. Cl. B65g 11/00
U.S. Cl. 14—71 12 Claims

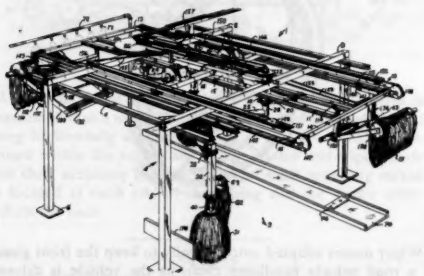


An aircraft loading bridge can be constructed utilizing two tunnel sections, the first of which extends from a terminal to a first vertically movable vestibule, the second tunnel extends between the first vestibule and a second vertically movable vestibule. Means are provided on these vestibules for gaining access to an aircraft. By regulating the height of the vestibule the complete bridge can be used to accomodate various different aircraft without making the slope of the tunner sections undesirably steep. If desired, a first tunnel section and an associated vestibule may be initially installed at a terminal and then subsequently a second tunnel section and a vestibule may be added to the already existing structure.

3,793,663
## VEHICLE WASH APPARATUS

Gordon V. Lieffring, Prairie Village, Kans., assignor to Rolo-Wash, Inc., Kansas City, Mo.

Filed Dec. 6, 1971, Ser. No. 205,028
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D 8 Claims

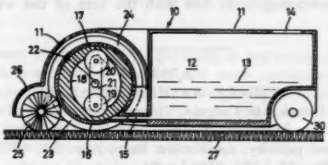


A vehicle washing apparatus having a supporting structure over a vehicle wash position in which a vehicle is parked during washing operations. The apparatus includes top brushes movable longitudinally of the vehicle in side by side paths, the brushes being swingable up and down to engage top surfaces of the vehicle as they are moved therealong. Brushes to engage the sides and ends of the vehicle in the wash position are carried in depending relation to ends of overhead outer arms which have other ends pivotally connected to an end of an inner arm which has its inner end pivotally mounted above the vehicle wash position, there being two sets of arms and side brushes with the inner arms in longitudinally spaced relation and extending in generally opposed directions whereby each operate on a respective side and end portion of the vehicle. The apparatus has sprays for detergents and rinsing liquids to direct same onto the vehicle and power means connected to said inner arms and top brush means to effect movement thereof during washing operation. The apparatus has controls, whereby at the end of the washing cycle the top brushes are raised and the side and end brushes swing outwardly away from the vehicle and are returned to washing position in response to positioning another vehicle in the wash position. Each brush structure travels in one direction to scrub its respective portion of the vehicle, makes a return path thereover and moves away from the vehicle at the end thereof which is the end of the washing cycle.

3,793,664
## CLEANING DEVICE

Gunter Leifheit, and Johannes Liebscher, both of Nassau-Lahn, Germany, assignors to Leifheit International Gunter Leifheit KG, Nassau-Lahn, Germany

Division of Ser. No. 881,440, Dec. 2, 1969, Pat. No. 3,696,458.
This application July 10, 1972, Ser. No. 270,570
Int. Cl. A47l 11/03
U.S. Cl. 15—50 C 9 Claims

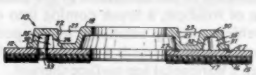


A cleaning device comprises a reservoir for containing a body of formable material in unfoamed state. Converting means is connected with the reservoir for receiving from the latter unfoamed material and for converting this into foamed state. Moving means mounts the reservoir and converting means for movement over a surface to which the material is to be applied in unfoamed state.

3,793,665
## SHOWER FEED ASSEMBLY

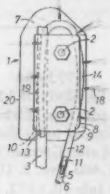
James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 13, 1972, Ser. No. 234,104
Int. Cl. A46b 13/02; A47l 7/02
U.S. Cl. 15—180 4 Claims



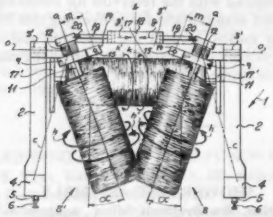
A floor-treating machine head assembly for use with rotary floor surfacing machines. The assembly comprises a support member, a base plate, and a backing with fastening means releasably securing the scrubbing pads or brushes to the head assembly. The support member has recesses in the top surface which receive the detergent and shampoo solutions and directs the same downward through the base plate. A cavity is formed by the assembly and controls the foam from the solutions and does not allow this foam to interrupt the flow of the solutions through the assembly into the scrubbing member.

3,793,666
WINDSCREEN WASHER
Anthony Brillenburg Wurth, Teckerstraat 12, 3052 Ottenburg, Belgium
Filed Dec. 23, 1971, Ser. No. 211,583
Int. Cl. B60s 1/52
U.S. Cl. 15—250.04 5 Claims



The windscreen washer comprises a deflector protecting, against the vehicle slipstream, liquid nozzles with which it is provided. The turbulence effect set up in the vicinity of the nozzles deflects the liquid towards the windscreen. The deflector is advantageously fast with the arm of the windscreen wiper.

3,793,667
VEHICLE-WASHING APPARATUS
Uberto Capra, Alte Ceccato, Vicenza, Italy
Filed Mar. 27, 1972, Ser. No. 238,369
Claims priority, application Italy, Apr. 30, 1971, 23918 A/71; May 22, 1971, 24865 A/71
Int. Cl. B60s 3/06
U.S. Cl. 15—21 E 11 Claims



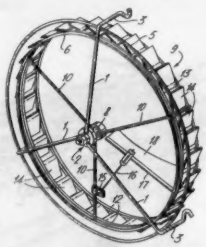
Two rotary scrubbing brushes, suspended from the lintel of a portal frame which straddles the path of a vehicle to be washed, are so balanced as to hang at an angle from the upper corners of the frame with their lower ends touching or crossing in the region of the centerline of the path. According to its direction of rotation, a brush coming into contact with an end of a vehicle moving relatively to the portal frame is swung either outwardly, to scrub a side of the vehicle, or upwardly to sweep a horizontal top surface thereof.

3,793,668
CURLING BROOM
Herbert Oliver Olson, Edmonton, Alberta, Canada, assignor to Olson Paddle Brooms (1972) Ltd., Edmonton, Alberta, Canada
Filed July 31, 1972, Ser. No. 276,733
Int. Cl. A47l 13/16; A63b 67/14
U.S. Cl. 15—210 R 2 Claims

A curling broom which comprises a handle, a paddle attached to the handle, which paddle is made of synthetic material, and a fabric cover enclosing the paddle. The paddle is tubular in form and made of flexible plastic. The thin wall provides desirable "spring-back" and yet the tube design ensures sufficient rigidity. The walls are downwardly tapered in

thickness to provide gradually changing flexibility. A slab of foam plastic is inserted within the tube for altering the weight and flexibility within narrow limits.

3,793,669
MEANS FOR CLEANING MOTOR ROAD VEHICLE HEAD LAMPS
William Wharton, Piccotts End House, Hemel Hempstead, England
Filed May 30, 1972, Ser. No. 257,547
Int. Cl. B60s 1/44
U.S. Cl. 15—250.22 4 Claims

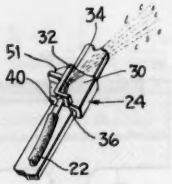


Wiper means adapted automatically to keep the front glass of a road vehicle headlamp clean as the vehicle is driven along, such means including a member which in use is disposed and is rotatable in a plane substantially parallel to the front glass of the headlamp, which member is adapted to drive a wiper element and has thereon blades arranged so that air flowing radially outwards over them from the centre of the member will cause rotation of the latter.

3,793,670
WINDSHIELD WASHER ASSEMBLY
William C. Riester, Williamsville, and Bronislaus S. Graczyk, Snyder, both of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.
Filed Aug. 9, 1971, Ser. No. 170,139
Int. Cl. B60s 1/46
U.S. Cl. 15—250.04 3 Claims

A windshield wiper cleaning system includes an arm mounted spray nozzle. The nozzle includes a baffle projecting from a base member having a surface at a compound angle

with respect to the member for dispersing the fluid into a conical shaped configuration of droplets and directing the array of droplets toward the windshield in the path of the windshield wiper. Washer solvent under pressure is directed through an orifice toward the baffle. A nipple is provided at the orifice to which flexible tubing extending along the length of the arm is connected at one end. At the other end the tubing is connected to a washer pump so that washer fluid can be directed through the tubing and the orifice against the baffle. In another embodiment a second baffle is provided which intersects the stream of the fluid and directs the stream toward the first baffle which in turn deflects the fluid to the windshield in a substantially conically shaped array of droplets. The provision of the second baffle results in increased directional control and in more finely divided droplets.

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**3,793,671**

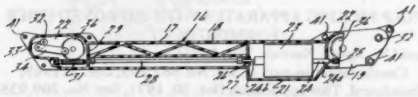
**WINDSHIELD CLEANER ASSEMBLY**

**Harold C. Gebhard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed June 19, 1972, Ser. No. 264,118**

**Int. Cl. B60s** *1/46, 1/24*

**U.S. Cl. 15—250.01** **7 Claims**



A cowl mounted windshield washer and wiper system is preassembled as a unit. The assembly comprises an elongated casing horizontally divided into upper and lower half shells. Housed within the casing are a drive motor and wiper blade pivot shaft actuating means. The pivot shaft actuating means are located at each end of the casing and the motor intermediate the ends.

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**3,793,672**

**HEAT RECOVERABLE ARTICLE AND PROCESS**

**Judson Douglas Wetmore, San Mateo, Calif., assignor to Raychem Corporation, Menlo Park, Calif.**

**Division of Ser. No. 812,789, April 2, 1969. This application Dec. 6, 1972, Ser. No. 312,703**

**Int. Cl. F16l** *5/00;* **B29d** *27/00;* **B29c** *25/00*

**U.S. Cl. 16—2** **18 Claims**

A heat recoverable article having intersticed walls, the interstices being filled with a compressible fluid so that the wall thickness of the article can be varied without appreciably varying the length of the article, together with the process of making such articles.

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**3,793,673**

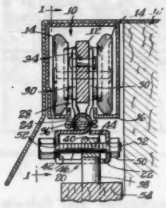
**LATERALLY ADJUSTABLE DOOR HANGER**

**Edwin F. Lawrence, Jr., Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.**

**Filed Nov. 17, 1971, Ser. No. 199,661**

**Int. Cl. A47h** *15/00*

**U.S. Cl. 16—97** **4 Claims**



The present invention relates generally to improvements in slideable door-suspending devices and more particularly to novel structural improvements which will greatly facilitate the ease with which a horizontally slideable door member may be laterally adjusted. The present application discloses in combination with a carriage horizontally slideable within an overhead track, a frame pivotally suspended from the underside of a carriage device, a rotary threaded shank traversing said frame and a vertically disposed door hanger member or rod having a threaded aperture at its upper extremity for telescopically accommodating the threaded shank, and means at the opposite extremity thereof for attachment to the upper portion of a door member.

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**3,793,674**

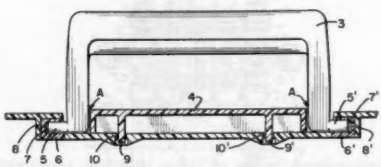
**HANDLE ASSEMBLY**

**Joseph W. Kneier, Chesterland, Ohio, assignor to Pendleton Tool Industries, Inc., Los Angeles, Calif.**

**Filed Dec. 1, 1972, Ser. No. 311,215**

**Int. Cl. A47b** *95/02*

**U.S. Cl. 16—126** **7 Claims**



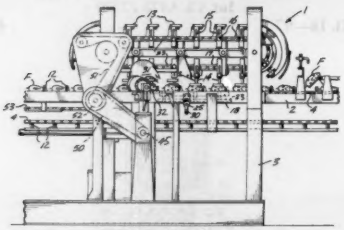
A handle assembly for use on hand-carried receptacles such as tackle boxes, articles of luggage, bulk containers, trays or the like. The assembly comprises a handle having trunnions formed thereon at either end thereof which extend co-axially and engage trunnion supports disposed in the wall element of the receptacle. The trunnion supports comprise inserts which are placed in pockets formed in the wall element providing a water tight seal between insert and pocket while allowing pivotal rotation of the handle for flush storage thereof in a recess provided in the wall element. A spacer bar secures the trunnions in the trunnion supports by preventing their axial movement once inserted.

3,793,675

## FISH-CONVEYING MECHANISM

Elmer R. Hogan, Bellevue, and John I. Simpson, Seattle, both of Wash., assignors to Smith-Berger Manufacturing Corporation, Seattle, Wash.

Division of Ser. No. 19,162, March 13, 1970, Pat. No. 3,670,363. This application Mar. 27, 1972, Ser. No. 238,271
Int. Cl. A22c *25/14*
U.S. Cl. 17—59 9 Claims



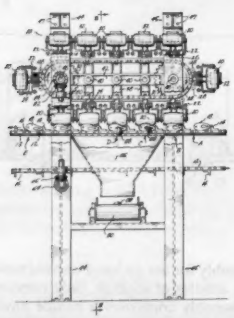
Fish-beheading mechanism and fish-cleaning mechanism are driven by a common drive means, including a jaw clutch engageable in different positions to alter the timed relationship between the fish-beheading mechanism and the fish-cleaning mechanism. A tail-receiver lifted by a cam wheel rotating about a horizontal axis transfers the fish from the feed table of the fish-beheading mechanism to tail-impaling pins of the fish-cleaning bull ring. In a common drive for the bull ring and the beheading table an automatic satellite gear train throw-out will disengage a holding lever to disconnect the drive for the means feeding the cleaning mechanism if such feeding means becomes overloaded.

3,793,676

## METHOD AND APPARATUS FOR REMOVING ROE AND VISCERA FROM A FISH

Gary K. Wiggins, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Division of Ser. No. 11,092, Feb. 13, 1970. This application July 7, 1972, Ser. No. 269,794
Int. Cl. A22c *25/00*
U.S. Cl. 17—45 3 Claims



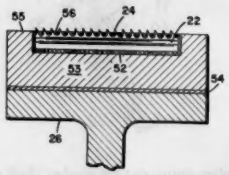
Method and apparatus for removing roe, milt producing organs and other entrails from deheaded fish at high speed by resilient pressure applied tail forward of the fish as conveyed sidewise along a path of travel. Rollers and the like of various configurations, moved across the fish during conveyance thereof, are used to apply the resilient pressure on a repetitive basis.

3,793,677

## CARD CLOTHING

Alfred R. Bechtel, Jr., Portsmouth, R.I., assignor to Ashworth Bros. Inc., Fall River, Mass.

Continuation-in-part of Ser. No. 71,481, Sept. 11, 1970, Pat. No. 3,737,953. This application July 29, 1971, Ser. No. 167,162
Int. Cl. D01g *15/26*
U.S. Cl. 19—113 4 Claims



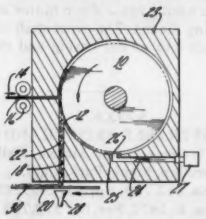
Card clothing for flats comprising a plurality of elongated wire strips assembled in side by side relationship and inclined at an angle to the direction of fiber flow across the flats. The strips have upstanding portions laterally spaced apart, and each upstanding portion provides a row of teeth having sides inclined at an angle to the direction of fiber flow. Either the wire strips or conventional fillet card clothing can be covered to a predetermined extent with a plastic material to control or limit the degree of exposure of the teeth or pins.

3,793,678

## PULP PICKING APPARATUS WITH IMPROVED FIBER FORMING DUCT

David W. Appel, Neenah, Wis. 54956

Continuation-in-part of Ser. No. 882,265, Dec. 4, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 209,935
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 4 Claims



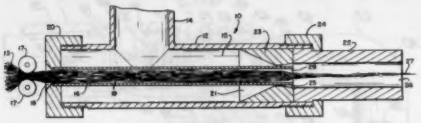
An apparatus and method for airlaying wood pulp fibers which avoids fiber floccing is disclosed. Wood pulp sheets are divellicated with a picker roll and the individual fibers are conveyed through a forming duct to a collecting screen. The position of the forming duct with respect to the picker roll and the size of the duct are such that the fibers separated from the sheets maintain substantially the same velocity during their travel through the forming duct. A process air duct for supplying air to transport the fibers to the collecting surface is used; and, when high picking rates are desired, a supplemental air duct is also employed.

3,793,679

## PNEUMATIC DRAFTING OF FIBROUS STRANDS

Preston F. Marshall, Walpole, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed July 2, 1971, Ser. No. 159,229
Int. Cl. D01g 25/00
U.S. Cl. 19—156.3 4 Claims



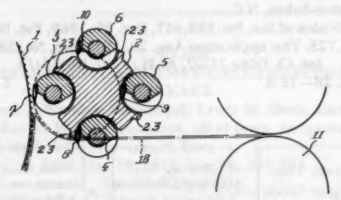
A twist-free strand of textile length fibers is pneumatically drafted at its leading end into a high velocity fibrous stream which may be decelerated and diffused in a plenum chamber from which it is removed as a fibrous web.

3,793,680

## CARDING ENGINE PROVIDED WITH A ROTARY TYPE WEB STRIPPING DEVICE

Kiichi Ota, 5-1, Hinatamachi 3-chome, Mizuho-ku, Nagoya, Japan

Filed Dec. 8, 1972, Ser. No. 313,491
Int. Cl. D01g 15/50
U.S. Cl. 19—106 R 3 Claims



A carding engine provided with a rotary type web stripping device for stripping a web of material from a doffer cylinder having a stripping roller assembly which includes a plurality of stripping rollers having stripping combs associated therewith. A differential gear train assembly interconnects the stripping roller assembly and the stripping rollers such that the stripping rollers are rotated in a direction which is opposite to that direction in which the stripping assembly is rotated, the stripping combs of the stripping rollers being positioned adjacent the doffer cylinder so as to safely strip the web of material therefrom. As the stripping combs strip the material from the doffer cylinder, the stripping rollers are subsequently rotated by the gear assembly so as to positively release the material from the combs whereupon the material may then be conveyed to delivery rollers.

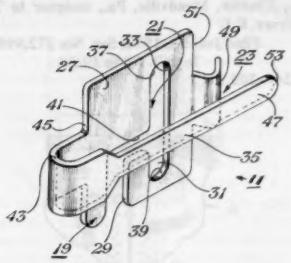
3,793,681

## HOLDER FOR TIES AND THE LIKE

Floyd C. Casstevens, Jr., and Truett C. Henry, both of Fort Worth, Tex., assignors to F & W Products, Inc., Fort Worth, Tex.

Filed Jan. 22, 1973, Ser. No. 325,242
Int. Cl. A41d 25/04; A44b 13/00
U.S. Cl. 24—60 7 Claims

A holder for holding depending folds of a tie, scarf or the like in place characterized by an anchoring portion adapted to anchor the holder to button threads; a locking means carried by the anchoring portion for preventing the holder from slipping from anchoring engagement with the threads when in place; fold retaining structure connnected with the anchoring portion and including an elongate horizontal clamp bar that is connected at one end with the anchoring portion and a retaining means carried at the other side of the anchoring portion and extending forwardly toward the free end of the horizontal clamp bar for retaining the folds in place. Also disclosed are specific embodiments including use of respective slots in the anchoring portion and in the locking means, the slot serving as a locking means having a vertically extending portion for accommodating vertical movement of the holder and its tie without slipping from engagement with the threads and without causing discomfort to the wearer.

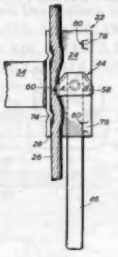


3,793,682

## DUAL ROPE CLAMP

Robert C. Nelson, 727 Heatherwood Rd., Bluefield, W. Va. 24701

Filed Oct. 2, 1972, Ser. No. 294,345
Int. Cl. F16g 11/00
U.S. Cl. 24—134 P 7 Claims



Rope clamp optionally usable on one or another standard size of wire rope to attach a conveyor roller assembly or supporting stand. An elongated plate has a lateral flange providing an L-cross-section angle bracket with a rope-receiving bight extending along the inner corner. A cable-locking dog member is rotatably supported on the inside of the plate and connected to an external lever. The locking dog member has a pair of diametrically opposed cam surfaces and is eccentrically mounted in such a way that one of the cam surfaces is offset from the axis of rotation more than the other cam surface. A third peripheral surface intermediate the cam surfaces is spaced from the axis of rotation a lesser distance than either of the cam surfaces, the latter being inclined to crowd rope into the bight. The lever has two 180°-displaced operating positions lengthwise of the bracket. One diameter of wire rope can be clamped by moving the lever to one of these operating positions, and a different diameter wire rope can be clamped

by moving the lever to the other operating position. The clamp is specifically described for rope sideframe conveyors where current practice has standardized on either ¾ inch or ⅝ inch diameter wire rope depending on the size of conveyor and service requirements.

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**3,793,683**

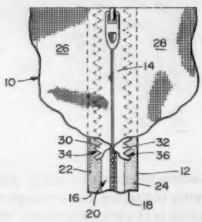
**ADHESIVE INSTALLED SLIDE FASTENER**

**Bruce K. Thaeler, Meadville, Pa., assignor to Textron Inc., Providence, R.I.**

**Filed July 18, 1972, Ser. No. 272,999**

**Int. Cl. A44b** *19/34*

**U.S. Cl. 24—205.1 R** **14 Claims**




A slide fastener having a single strip of adhesive on each carrier tape is bonded directly to each folded seam allowance at a garment opening and to each main fabric section adjacent the opening. A thermoplastic adhesive permits permanent installation of the slide fastener by means of an iron without the use of stitching threads.

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**3,793,684**

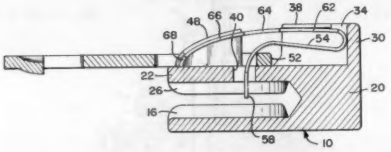
**SLIDER FOR SLIDE FASTENER**

**George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.**

**Filed Sept. 15, 1969, Ser. No. 857,988**

**Int. Cl. A44b** *19/30*

**U.S. Cl. 24—205.14** **2 Claims**




A slider for a slide fastener device having a pair of wing portions connected in spaced relation by a post element and having an upper structure on one of the wing portions of sufficient height to receive any load applied to the slider and transmit such load to the connecting post. The upper structure includes a wall surface super-imposed over the connecting post and being substantially flush with the leading edges of the connecting post and the leading edges of the wing portions.

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**3,793,685**

**COUPLING APPARATUS FOR THE MOORING OF BOATS OR THE LIKE**

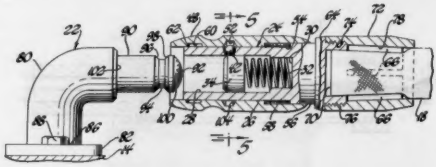
**Hillery G. Knecht, 2766 W 11 Mile, Berkley, Mich. 48072**

**Filed Mar. 3, 1971, Ser. No. 120,477**

**Int. Cl. A44b** *17/00, 11/25*

**U.S. Cl. 24—230 AN** **4 Claims**

A coupling apparatus has two sections movable relative to each other for effecting connection and disconnection therebetween; one the the sections includes a generally tubular housing with ball type detent means carried thereby which detents are radially movable with respect to the tubular housing; a plunger-like member within the tubular housing served to hold the ball detents radially outwardly and thereby keep an outer sleeve in a cocked position; the other of the two sections includes a shaft-like extension provided with an annular



groove formed near the outer-most end thereof which, when inserted into the tubular housing, is effective for depressing the plunger and having the ball detents move radially inwardly to be at least partly received in the annular groove; the outer sleeve is biased toward a second position whereat it prevents the radial outward movement of the ball detents thereby resulting in the shaft-like extension being securely connected to the tubular housing.

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**3,793,686**

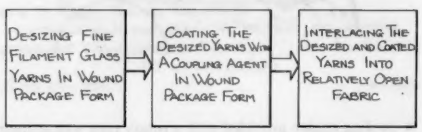
**METHOD OF FORMING GLASS FABRIC SUITABLE FOR CASTS, BANDAGES, AND THE LIKE**

**John L. Nisbet, and Hubert C. Woodall, Jr., both of Winston-Salem, N.C., assignors to Carolina Narrow Fabric Company, Winston-Salem, N.C.**

**Division of Ser. No. 888,447, Dec. 29, 1969, Pat. No. 3,686,725. This application Aug. 23, 1972, Ser. No. 283,061**

**Int. Cl. D06c** *25/02;* **A61l** *15/00;* **D06l** *1/14*

**U.S. Cl. 28—75 R** **5 Claims**


DESIZING FINE FILAMENT GLASS YARNS IN WOUND PACKAGE FORM
COATING THE DESIZED YARNS WITH A COUPLING AGENT IN WOUND PACKAGE FORM
INTERLACING THE DESIZED AND COATED YARNS INTO RELATIVELY OPEN FABRIC

A method of producing a relatively open air permeable glass fiber fabric for use in orthopedic casts, bandages and the like and comprising interlaced chemically desired glass yarns consisting essentially of filaments having an average diameter not greater than about 0.00021 inches. The fabric is formed by a method wherein sized glass yarns consisting of filaments of the above diameter are desized by forcing a treatment solution through the yarns while confining the yarns in wound package form. A coupling agent may also be applied to the glass yarns, and then the yarns are interlaced to form a fabric.

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**3,793,687**

**METHOD FOR MACHINING THE STROKE BEARINGS AND LINE BEARINGS OF A CRANK SHAFT**

**Hermann Berbalk, Goppingen, Germany, assignor to Gebruder Boehringer Gesellschaft mit beschrankter Haftung, Goppingen, Germany**

**Filed Feb. 20, 1973, Ser. No. 333,513**

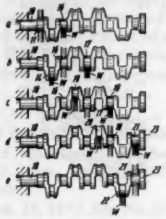
**Claims priority, application Germany, Feb. 23, 1972, 2208593**

**Int. Cl. B23c** *3/06*

**U.S. Cl. 29—6** **2 Claims**

Pairs of bearing sections of a crankshaft, each pair comprising a line bearing and an adjacent stroke bearing are machined

consecutively starting with a pair close to one end of the crankshaft and proceeding pair by pair towards the other end of the crankshaft. In this operation the section of the crankshaft located between the pair in cutting engagement with the tools and the other end of the crankshaft is left radially upsupported and freely to undergo any deformation that may result from the removal of stock by the tools, whereas the other section of the crankshaft including the pair of bearings



machined in the preceding operation is held by engagement with suitable clamping means. As a result of this method any deformation of the character just explained is eliminated by the subsequent machining operation and the end product is free from any deformation. Therefore, it is no longer necessary, as heretofore, to subject the crankshaft after the roughing operation to a truing and finishing operation prior to the heat treatment and the grinding operation.

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**3,793,688**

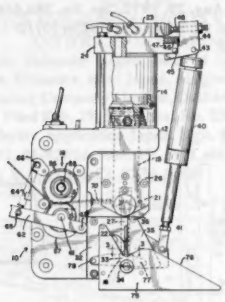
**APPARATUS FOR HERMETICALLY SEALING A PACKAGE**

**Raymond J. Keating, Bettendorf; Lewis M. Shuh, Davenport, and Roy E. Wells, Maquoketa, all of Iowa, assignors to The Kartridg Pak Co., Davenport, Iowa**

**Filed May 10, 1971, Ser. No. 141,588**

**Int. Cl. B23p** *23/04*

**U.S. Cl. 29—33.5** **5 Claims**



A method and apparatus for forming and applying closure fasteners to the gathered neck portions of bags or casings wherein the fastener is preformed from wire stock into a U shape by means of a fastener forming and applying apparatus which includes a punch and co-operating anvils operable to preform the fasteners while simultaneously applying a previously formed fastener to a gathered bag neck so as to wrap the legs of the fastener tightly about the bag neck material with the legs lying side by side and providing a tight hermetic seal.

**3,793,689**

**TUBULAR ROLLER**

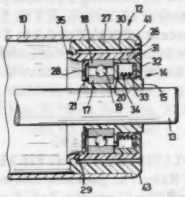
**Dieter Specth, Dhuenn/Rhineland, Germany, assignor to Hans Vom Stein oHG, Dhuenn/Rhineland, Germany**

**Filed Oct. 16, 1972, Ser. No. 297,987**

**Claims priority, application Germany, Feb. 4, 1972, P 22 05 242.2**

**Int. Cl. B21b** *13/02*

**U.S. Cl. 29—116 R** **7 Claims**



A tubular roller has a circumferential tubular wall provided at its opposite ends with circumferentially offset first cutouts and projections located between adjacent ones of the cutouts. The roller further has two end walls located at the opposite ends and rigidly connected with the tubular wall. The end walls each have circumferentially offset second projections received in the first recesses of the tubular wall, and second recesses which accommodate the first projections of the tubular wall.

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**3,793,690**

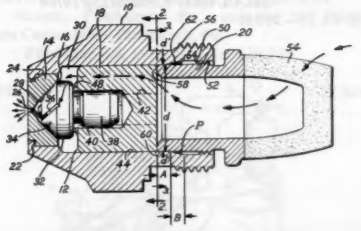
**NOZZLE**

**Alex Wayne, Des Moines, Iowa, assignor to Delavan Manufacturing Company, West Des Moines, Iowa**

**Division of Ser. No. 65,545, Aug. 20, 1970, Pat. No. 3,672,578. This application Apr. 13, 1972, Ser. No. 243,882**

**Int. Cl. B21d** *53/00*

**U.S. Cl. 29—157 C** **3 Claims**



In a fluid nozzle the clearance between the nozzle body and an orifice retaining member is reduced in a zone between the spray orifice and passages in a fluid distributor and the threads by which the retaining means is threaded into the nozzle body such that the clearance is smaller than the minimum cross sectional dimension of either the spray orifice or the passages in the fluid distributor which distribute the fluid to be sprayed in the spray orifice to prevent clogging by particulate contaminants present on the threads.

3,793,691
THERMAL AND ABRASION RESISTANT SINTERED ALLOY
Kentaro Takahashi, Ohmiya; Minoru Hasegawa, Saitama, and Kaoru Nara, Kawaguchi, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed Sept. 5, 1972, Ser. No. 286,389
Claims priority, application Japan, Sept. 2, 1971, 46/66979
Int. Cl. B22f 1/00, 5/00
U.S. Cl. 29—182 1 Claim

An alloy prepared by molding a powdery composition comprising 0.6 to 2 percent of carbon, 0.5 to 5 percent of molybdenum, 6 to 15 percent of cobalt and 1 to 5 percent of copper, by weight, and the balance being iron, and then sintering the molded composition has large thermal resistance and abrasion resistance.

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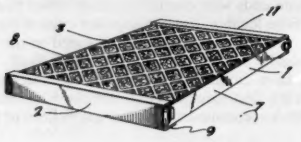
3,793,692
FLUID TREATING FILTER
John E. Tate, and Robert L. Jackson, Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.
Division of Ser. No. 111,303, Feb. 1, 1971, abandoned. This application Dec. 12, 1972, Ser. No. 314,368
Int. Cl. B01d 27/08
U.S. Cl. 29—163.5 F 4 Claims



An improved filter for treating fluids utilizing a frame of unitary construction. The frame is constructed from a sheet of expanded substantially rigid material having solid sections disposed between sections of expanded material. The frame is adapted for folding into a box-like configuration with the solid portions forming end walls of the box. Filter media, such as fiberglas, is disposed within the enclosed box.

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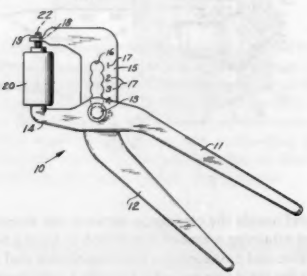
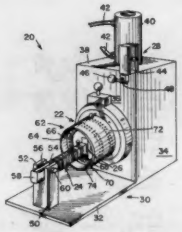
3,793,693
HAND TOOL FOR INSTALLING POINTS, CONDENSERS AND OTHER DEVICES
Michael Levak, 82165 Adobe Rd., Indio, Calif. 92201
Filed Jan. 19, 1973, Ser. No. 325,096
Int. Cl. H01r 43/00; B23p 19/04
U.S. Cl. 29—203 H 3 Claims



A pliers-like tool for installing devices. This tool consists primarily of a pair of pivotable handles with jaw means for gripping devices, one of the jaws having an opening for receiving the shank portion of condensers or other devices.

3,793,694
APPARATUS FOR USE IN REBUILDING ELECTROMAGNETIC UNITS
Anthony B. Norkaitis, 906 Linden Ct., Western Springs, Ill. 60558
Filed June 2, 1972, Ser. No. 259,220
Int. Cl. H02k 15/06
U.S. Cl. 29—205 R 11 Claims



An apparatus for rebuilding electrical units by inserting coils of wire into the units in a desired position, such as into stators of motors or generators. The apparatus includes means for positioning the part to be rebuilt, means for indexing it to a succession of different positions, means for guiding a coiled wire into the part at each of the positions, means for storing the coils of wire prior to insertion thereof, and means for repositioning the part holder after each of a first sequence of position movements is undergone. According to the invention, wire is coiled about a coil receiving mandrel, this mandrel is positioned within a part receiving mandrel, the wire is fed from the wire mandrel in coils into slots in the stator or armature, and, in the case of multi-phase motors or generators, after each slot is filled, the part is indexed by rotation to the next succeeding postion for repetition of the cycle.

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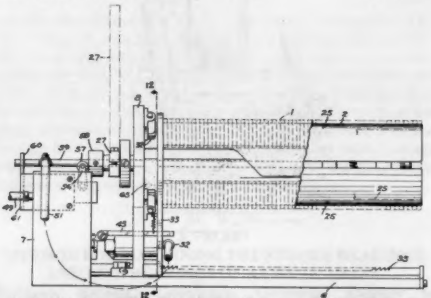
3,793,695
DEVICE FOR AUTOMATICALLY LOADING AN OIL RING SPACER-EXPANDER INTO THE OIL RING GROOVE OF A PISTON
Ronald E. Carter, Muskegon, and Jack S. Clifford, North Muskegon, both of Mich., assignors to Sealed Power Corporation, Muskegon, Mich.
Filed Aug. 29, 1972, Ser. No. 284,656
Int. Cl. B23q 7/10; B23p 15/10
U.S. Cl. 29—211 R 23 Claims



A device for automatically loading an oil ring spacer-expander into the oil ring groove of a piston. The device has an expandable mandrel over which is telescoped a fiberboard tube upon which a quantity of spacer-expanders are stacked. The mandrel is expanded by a cam arrangement so that the inside dimension of the shoe surfaces of the mandrel are slightly larger than the largest land diameter of the piston. Upon inserting a piston into the open end of the expanded mandrel, the top of the piston acts through a push rod to open an air

valve, pressurizing a cylinder which causes a pawl to engage a rack and move the cylinder and a pusher ahead one rack pitch or ring width. The pusher engages the rear spacer-expander of the stack of spacer-expanders and advances the stack one ring width, the forward spacer-expander on the stack being pushed from the tube into the oil ring groove. Upon removal of the piston the air valve is closed, de-pressurizing the cylinder, causing the pawl to advance one rack pitch, and the cycle will be repeated upon the insertion of another piston into the expanded mandrel. When the last ring on the tube has been loaded, the mandrel is collapsed, the empty tube removed, the cylinder, pawl and pusher assembly moved to starting position and a new fiberboard tube with a stack of spacer-expanders is telescoped over the mandrel and the device is again ready to load spacer-expanders on successive pistons.

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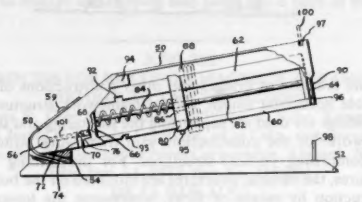
**3,793,696**

## CLIP FASTENER DISPENSER

**Davis N. Barr, 2705 Via Montezuma, San Clemente, Calif. 92672, and Bill J. Hays, 10582 Palladium Ave., Garden Grove, Calif. 92640**

**Filed Feb. 28, 1972, Ser. No. 229,777**
**Int. Cl. B23q 7/10**
**U.S. Cl. 29—212 P** **12 Claims**



An improved dispenser for clip type fasteners is disclosed wherein the clips are mounted in a face-to-face array in a dispenser housing that is pivotally mounted on a base. The leading fastener is ejected from the housing by ejection ram means so mounted that it reciprocates in a transverse plane to the array of fasteners with fastener engaging means carried on the ram to engage and eject the leading fastener through an aperture in the housing.

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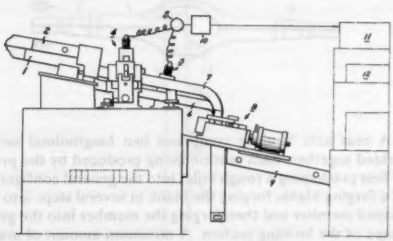
**3,793,697**

## APPARATUS FOR AUTOMATICALLY ASSEMBLING ANTIFRICTION BEARINGS

**Takasi Inque; Shinsuke Nagao, both of Iwata, and Hiroshi Nakamura, Shizuoka, all of Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan**

**Filed Feb. 29, 1972, Ser. No. 230,231**
**Claims priority, application Japan, Sept. 6, 1971, 46-69039; Nov. 19, 1971, 46-92816; Nov. 17, 1971, 46-108027**
**Int. Cl. B23p 19/04**
**U.S. Cl. 29—201** **6 Claims**



In an apparatus for automatically assembling antifriction bearings wherein inner and outer rings and rolling elements are assembled together to automatically complete antifriction bearings, an improved apparatus whereby the step of measuring the groove diameters of inner and outer rings and the step of feeding rolling elements to measured inner and outer rings to complete the assembling of antifriction bearings are independently carried out so that the assembling station is permitted to operate continuously without involving idle motion. A control circuit and a mechanism for withdrawing rolling elements to be used in said apparatus, and other constructional advantages and particulars will be made clear.

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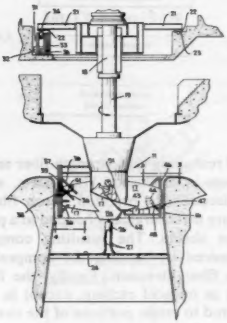
**3,793,698**

## METHOD OF REPAIRING CAVITATION DAMAGE ON A HYDRAULIC TURBINE

**Iden Dean Goings, 4858 N. 13th St., Terre Haute, Ind. 47805**

**Filed Jan. 8, 1973, Ser. No. 322,042**
**Int. Cl. B23p 7/00**
**U.S. Cl. 29—401** **4 Claims**



The method disclosed involves installation of welding, machining, etc. apparatus on the turbine runner itself, the apparatus extending into close proximity to the turbine draft or discharge tube wall, and then mechanically rotating the turbine runner so that the machining or other apparatus is moved over the wall for conditioning or repairing it. In effect, a vertical boring mill is formed using the runner of the turbine itself as a tool.

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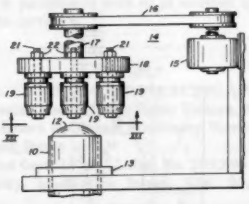
**3,793,699**

## METHOD OF FINISHING METAL BALL-BAT

**Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.**

**Filed Mar. 30, 1971, Ser. No. 129,505**
**Int. Cl. B23p 17/00**
**U.S. Cl. 29—415** **3 Claims**



A metal ball-bat and method of finishing a tubular metal ball-bat at the large diameter end by securing a generally cylindrical resilient member within the end portion of the ball-bat. The resilient member is forceably inserted into the ball-

bat end, and the end edge of the ball-bat deformed circumferentially inward to secure the resilient member within the bat. The resilient member also overlaps the end edge of the metal ball-bat as a safety feature.

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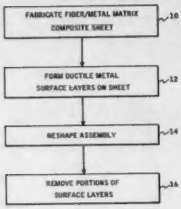
**3,793,700**

## METHOD OF RESHAPING METAL MATRIX COMPOSITE MATERIAL

**Charles R. Maikish, and Herman R. Wiant, both of Cajon, Calif., assignors to General Dynamics Corporation, San Diego, Calif.**

**Filed Sept. 1, 1972, Ser. No. 285,684**
**Int. Cl. B23p *17/00***
**U.S. Cl. 29—419** **6 Claims**




A method of reshaping high strength fiber reinforced metal composite sheets is disclosed. The sheets, which typically comprise unidirectionally oriented boron fibers in an aluminum matrix are metallurgically bonded to a pair of thin ductile metal face sheets. The resulting composite is then reshaped as desired by bending the composite along lines parallel to the fiber direction. Finally, the face sheets are removed, such as by acid etching, except in those areas in which it is desired to retain portions of the overlayer. Among other advantages, this technique permits much sharper radius bends by much simpler techniques that those previously used with such composite materials.

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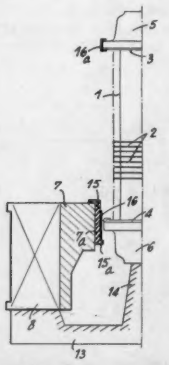
**3,793,701**

## PROCESS FOR THE CONNECTION BY SETTING OF COLLECTORS ON WATER-BOXES OF HEAT EXCHANGERS

**Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France**

**Filed Dec. 1, 1970, Ser. No. 94,237**
**Claims priority, application France, Dec. 4, 1969, 6942015**
**Int. Cl. B23p *17/00***
**U.S. Cl. 29—421** **5 Claims**




The process for the connection by crimping of collectors on water-boxes of heat exchangers is characterized in that parts of the collector and the water-box are surrounded by an electrically conductive metallic belt which is then submitted to at least one high electromagnetic pulse.

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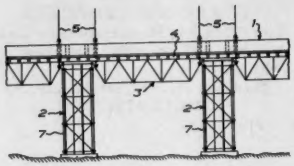
**3,793,702**

## METHOD OF DISMANTLING FRAMEWORK STRUCTURES

**Nils Harald Ahlgren, Skyttevagen 22 F, 133 00 Saltsjobaden, Sweden**

**Filed Apr. 20, 1972, Ser. No. 245,987**
**Claims priority, application Sweden, Apr. 29, 1971, 5594/71**
**Int. Cl. B23p *19/00***
**U.S. Cl. 29—426** **3 Claims**




In the erection of bridges and other constructions of considerable horizontal length, special framework structures or scaffoldings are used for supporting the shuttering and similar framework for the construction, said framework structures also comprising vertical structures. For dismantling these structures, the vertical structures are mounted on the building construction by means of jacks, whereupon the lowermost parts of the structures are dismantled at ground level. The vertical structures are then successively lowered to be successively dismantled at ground level.

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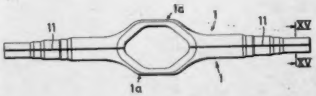
**3,793,703**

## PROCESS FOR FABRICATING REAR AXLE HOUSING FOR MOTOR VEHICLES

**Helmut Winkler, Meerbusch; Gunter Seifert, Leverkusen; Hans Moll; Otto Oeckl, both of Munich, and Eberhard Werner, Leverkusen, all of Germany, assignors to Emuco Aktiengesellschaft fur Maschinenbau, Leverkusen and Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, both of, Germany, part interest to each**

**Filed Oct. 8, 1971, Ser. No. 187,667**
**Claims priority, application Germany, Oct. 10, 1971, P 20 49 889.9**
**Int. Cl. B21d *39/02***
**U.S. Cl. 29—463** **10 Claims**



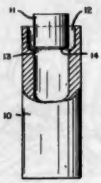

A rear axle housing comprises two longitudinal sections welded together, each section being produced by the process of first preshaping a rough billet into the general configuration of a forging blank, forging the blank in several steps into a flat shaped member and then forging the member into the general shape of the housing section. A minimum amount of machining is required to remove the excess material and finish the housing. A special apparatus is provided for performing the intermediate steps of forging the preformed billet into a shaped forging blank.

3,793,704

## METHODS OF ASSEMBLING JOINTS

John N. Antonevich, Jamestown, N.Y., assignor to Blackstone Corporation, Jamestown, N.Y.

Filed July 24, 1972, Ser. No. 274,173
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 5 Claims



A method of assembling parts is provided in which a pair of interfitting surfaces adapted for press fitting are formed on the two parts, a driving force is applied to the two parts urging them axially together while a superposed vibrating force is applied to at least one of the two parts to cause the interfitting parts to engage and dipping said parts into a bath of molten metal.

3,793,705

## PROCESS FOR BRAZING A MAGNETIC CERAMIC MEMBER TO A METAL MEMBER

Thomas R. Cole, III, Boulder; William D. Kehr, Longmont, and James R. Wiitala, Louisville, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,894
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 13 Claims

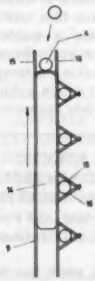
A strong, heat resistant, stress free joint is formed between nickel-zinc type ferrite ceramic and titanium by sputtering a thin chromium-containing metal layer on the ferrite joint site, and then brazing the metallized ferrite joint site to the titanium joint site by way of a silver-containing brazing alloy.

3,793,706

## METHOD FOR SEIZING, AND HOLDING FOR TRANSFER OF SMALL OBJECTS, PARTICULARLY COILED FILAMENTS FOR ELECTRICAL LAMPS AND THE LIKE

Klaus V. Dohlen, Landershofen, and Josef Lukas, Augsburg, both of Germany, assignors to Patent-Freuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munchen, Germany

Filed Jan. 17, 1972, Ser. No. 218,112
Claims priority, application Germany, Feb. 5, 1971, 2105517
Int. Cl. B23q *7/00*
U.S. Cl. 29—559 9 Claims



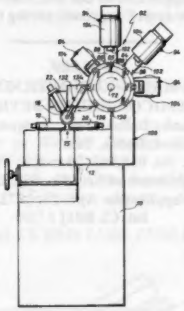
A belt, preferably of polyethylene, for example about 50 $\mu$ thick is provided which has cuts placed therein shaped to provide counter-directed projecting portions located essentially adjacent each other; in a preferred form, a single Z-shaped cut can be used. The belt is wrapped about a mandrel of small diameter, preferably less than the distance of the base portions of the cuts, so that when the belt is wrapped thereabout, the portions of the belt which project, between the cuts, will stand up to form flaps. The objects are dropped between the upstanding projections and when the belt is again straightened, the upstanding projections will resiliently hold the objects against the remainder of the belt, for transport and further processing, for example by immersing the belt with the objects in a chemical dissolving bath.

3,793,707

## AUTOMATIC TURNING MACHINE

Gerhard Foll, Esslingen-Sulzgries, and Heinz Dieter Baumer, Esslingen, both of Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen, Germany

Filed Dec. 30, 1971, Ser. No. 214,228
Claims priority, application Germany, Jan. 18, 1971, P 21 02 150.1
Int. Cl. B23q *39/04*
U.S. Cl. 29—563 15 Claims



An automatic turning machine which employs two discrete turning units and a transfer mechanism serving to deliver semifinished workpieces from the first unit to the second unit. The first unit employs a rotary work spindle which cooperates with several cross slides and, if necessary, with a turret or tool spindle for tools whereby the tools which are held by the cross slides and/or turret and tool slide treat the workpiece while the latter rotates with the work spindle. The second unit employs an indexible carrier with several sets of equidistant jaws which transport workpieces, received from the work spindle by way of the transfer mechanism, past several working stations at each of which a workpiece held by the respective jaws can be treated by one or more rotary tools which are mounted in tool spindles forming part of assemblies mounted for movement radially, in parallelism with or at another angle relative to the axis of the carrier.

3,793,708

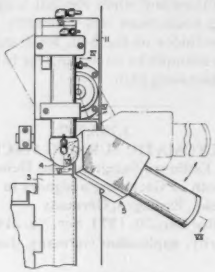
## AUTOMATIC CUTTING-TIP REPLACING APPARATUS

Toshiaki Watanabe, Kasugai, and Hideo Yuhara, Nagoya, both of Japan, assignors to Okuma Machinery Works Ltd., Kitaku, Nagoya-shi, Japan

Filed Sept. 18, 1972, Ser. No. 289,894
Claims priority, application Japan, Sept. 20, 1971, 46-73190
Int. Cl. B23q ; B23b *39/00, 29/00*
U.S. Cl. 29—568 6 Claims

An automatic cutting-tip replacing apparatus in a machine tool, having means for firmly clamping, at the required position, a cutting-tip which is detachably attached to the

predetermined position of a tool holder or a cutting tool shunk and for removing the cutting-tip therefrom, and also having means for feeding a spare tip to said required position, said apparatus being mounted on a rotary table rotating between the tip-replacing position and the awaiting position. This arrangement eliminates the prior need of replacing the entire tool holder and greatly reduces the size of the tool replacing device thereby making both the designing of the apparatus and the attachment of the apparatus to the machine easy, providing an efficient operation as well as greatly saving time and labor.



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**3,793,709**

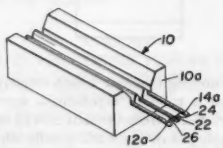
**PROCESS FOR MAKING A PLASTIC-ENCAPSULATED SEMICONDUCTOR DEVICE**

**Albert C. Baumann, Dallas, Tex., assignor to Texas-Instruments Incorporated, Dallas, Tex.**

**Division of Ser. No. 015,862, March 3, 1970, abandoned, which is a continuation of Ser. No. 562,239, July 1, 1966, abandoned. This application Apr. 24, 1972, Ser. No. 247,074**

**Int. Cl. B01j** *17/00*

**U.S. Cl. 29—588** **9 Claims**




Disclosed is a process for manufacturing semiconductor devices and the devices produced by the process. Lead wires are held in a carrier block, cantilevered out in proper position for assembly. Then, at least one of the cantilevered ends is flattened, a semiconductor device is bonded to the flattened end, and a wire is bonded to each of the other end wires and to a contact on the device. The device is then encapsulated in thermosetting plastic.

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**3,793,710**

**METHODS OF BONDING A BEAM-LEAD DEVICE TO A SUBSTRATE**

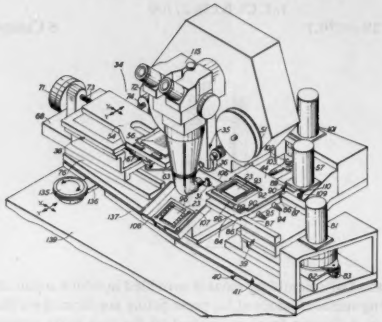
**Jack J. Monahan, Allentown, and Fred J. Schneider, Catasauqua, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.**

**Filed Oct. 12, 1971, Ser. No. 188,272**

**Int. Cl. B01j** *17/00*

**U.S. Cl. 29—577** **7 Claims**

A beam-lead bonder incorporates an automatically indexable feeder slide for feeding a selected integrated circuit device to a bonding station, and a shuttle table for positioning a particular bond site on a substrate in alignment with the selected device. The alignment can be checked by optical instrumentation and refined by a micromanipulator. Before bonding, the device is transferred to the bonding tip of the bonder, and the substrate is transferred to a bonding support. The feeder slide and the shuttle table retract, permitting the table to be loaded with a substrate for a subsequent bonding operation while bonding of the previously aligned device and substrate is taking place. The bonded substrate disengages from the bonding support after bonding and slides into a receiving tray.



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**3,793,711**

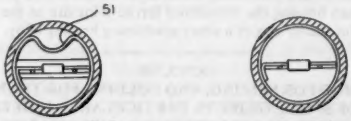
**METHOD OF MAKING THE PROBE ASSEMBLY OF A TEMPERATURE SENSOR**

**Steven J. Heiress, Chicago, Ill., assignor to V.A.C. Industries, Inc., Chicago, Ill.**

**Filed Apr. 14, 1972, Ser. No. 243,969**

**Int. Cl. G01r** *3/00*

**U.S. Cl. 29—595** **4 Claims**




A temperature sensor for sensing the temperature of air moving at low velocity including a transducer assembly having a temperature transducer element in association with a shield or case capable of having fast response and a high degree of accuracy at a specified temperature. The temperature transducer element includes a bobbin of plastic film over which wire sensitive to temperature is wound. A cover is provided over the wire, also of plastic film, and is bonded to the wire as is the bobbin to provide a stable assembly capable of withstanding severe shock and vibration. The invention also includes a method of making a temperature transducer assembly and in mounting it within a shield or case to avoid contamination with the air, while not sacrificing performance.

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**3,793,712**

**METHOD OF FORMING CIRCUIT COMPONENTS WITHIN A SUBSTRATE**

**Kenneth E. Bean, Richardson, and Paul S. Gleim, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

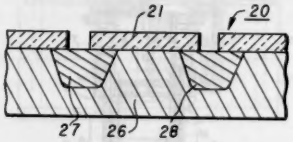
**Filed Feb. 26, 1965, Ser. No. 435,634**

**Int. Cl. B01j** *17/00*

**U.S. Cl. 29—577** **7 Claims**

Disclosed is a method of etching a cavity in a semiconductor body and redepositing semiconductor material in the cavity

formed thereby such that a uniform cavity is formed thereby allowing a uniform fill of semiconductor material resulting in a




planar surface by use of a semiconductor body with a crystal orientation other than (111). Also is disclosed the structure formed by the method.

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**3,793,713**

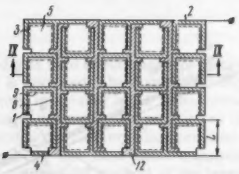
**SEMICONDUCTOR PHOTOELECTRIC GENERATOR AND METHOD OF ITS MANUFACTURE**

**Nikolai Stepanovich Lidorenko, 3 Mytischinskaya, 14a, kv. 127; Arkady Pavlovich Landsman, Rizhsky proezd, 3, kv. 140; Dmitry Semenovich Strebkov, Luganskaya, 21; Aita Konstantinovna Zaitseva, 3 Mytischinskaya ulitsa, 14, kv. 81; Vitaly Vinktorovich Zadde, poselok Severny, 9, Linia, 3, kv. 120, and Viktor Sergeevich Kosarev, 12 Novokuzminskaya ulitsa, 4, korpus 2, kv. 2, all of Moscow, U.S.S.R.**

**Division of Ser. No. 840,307, July 9, 1969, Pat. No. 3,653,971. This application May 12, 1971, Ser. No. 142,457**

**Int. Cl. B01j** *17/00*

**U.S. Cl. 29—583** **2 Claims**




A method of forming a semiconductor generator of semiconductor photoelectric converters united into a solid-state matrix, each conveter having the shape of a microminiature parallelpiped and containing; an alloy region; a base region; at least one P-N junction making an angle with an operating surface of the generator exposed to radiation; a metallic conductor on at least one of said regions making the same angle with the operative surface as the P-N junction and deposited all over the parallelepiped-surface uniting the parallelepipeds of the converters into a matrix; and wherein the width of a microminature parallelepiped is approximately equal to the diffusion length of minority carriers in said base region.

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**3,793,714**

**INTEGRATED CIRCUIT ASSEMBLY USING ETCHED METAL PATTERNS OF FLEXIBLE INSULATING FILM**

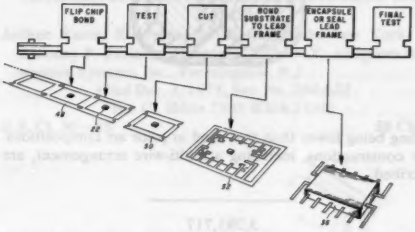
**Ernest Gerald Bylander, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed May 27, 1971, Ser. No. 147,577**

**Int. Cl. H01l** *7/66*

**U.S. Cl. 29—583** **2 Claims**

This disclosure provides methods and apparatus for assembling semiconductor devices. A first embodiment provides a method and apparatus for assembling an integrated circuit in which the chip is bonded to a pattern of leads which is disposed on a thin sheet of insulating material and the film is bonded to a lead frame in a single operation. The structure is then encapsulated and the lead frame trimmed to produce a completely packaged integrated circuit. A second embodiment provides a method and apparatus for packaging semiconductor devices in which the semiconductor chips are




first bonded to a pattern of leads which are disposed on a strip of thin insulated material. The strip of insulated material is then separated and the conductors bonded to a lead frame. The structure is then encapsulated and the lead frame trimmed to produce a completely packaged integrated circuit.

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**3,793,715**

**PROCESS FOR PRODUCING HIGH-QUALITY ELECTRETS**

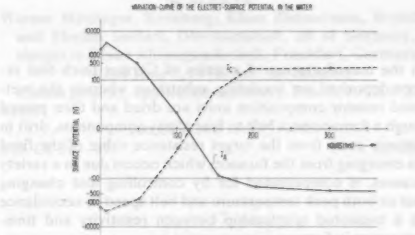
**Naohiro Murayama, and Makoto Fukuda, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo-to, Japan**

**Filed Aug. 26, 1971, Ser. No. 175,307**

**Claims priority, application Japan, Aug. 26, 1970, 45/74291**

**Int. Cl. H04r** *31/00, 17/00*

**U.S. Cl. 29—592** **4 Claims**



A process for producing a high quality electret comprising treating an electret having a heterocharge and a homocharge prepared from a molded resin in the presence of water to decay the unstable component of the heterocharge and the homocharge and maintain only a stable heterocharge.

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**3,793,716**

**METHOD OF MAKING SELF LIMITING HEAT ELEMENTS**

**Robert Smith-Johannsen, Portola Valley, Calif., assignor to Raychem Corporation, Menlo Park, Calif.**

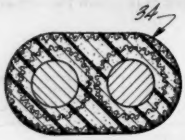
**Continuation-in-part of Ser. No. 88,841, Nov. 12, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,443**

**Int. Cl. H05b** *3/00*

**U.S. Cl. 29—611** **2 Claims**

A process for manufacturing self-limiting heating elements by casting a semi-conducting composition from solution or

fusing a powder. Preferred embodiments of the composition contain conductive carbon black and polyethylene, the black




loading being lower than that used in prior art compositions. New constructions, including a multi-wire arrangement, are described.

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3,793,717

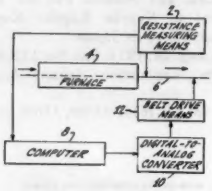
## METHOD OF CONTROLLING RESISTANCE VALUES OF THICK-FILM RESISTORS

**Robert Stephen Degenkolb, Indianapolis, Ind.; Trevor Richard Allington, Hempstead, England; Yin Huai Wang, and Martin Oakes, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.**

**Filed Apr. 1, 1971, Ser. No. 130,316**

**Int. Cl. H01c *17/00***

**U.S. Cl. 29—610** **7 Claims**




In the manufacturing of a series of Cermet thick-film resistors deposited on insulating substrates wherein the wet-printed resistor composition units are dried and then passed through a furnace on a belt to fuse glassy components, drift in resistance away from the target resistance value of the fired units emerging from the furnace, which occurs due to a variety of causes, is compensated for by controlling and changing either or both peak temperature and belt speed in accordance with a measured relationship between resistivity and time-temperature in furnace.

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3,793,718

## APPARATUS FOR REMOVING OR INSERTING A PISTON IN RECIPROCATING ENGINES

**Takeo Okazaki, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Company Ltd. and Japan Ship's Machinery Development Association, both of Tokyo, Japan, part interest to each**

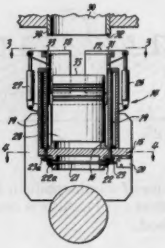
**Filed Nov. 3, 1972, Ser. No. 303,310**

**Claims priority, application Japan, Nov. 8, 1971, 46-88826**

**Int. Cl. B25b *27/14***

**U.S. Cl. 29—256** **1 Claim**

A device to assist the mounting and dismounting of a piston through the crankshaft side of the cylinder of a reciprocating engine. The device mounts upon the crankshaft and is adapted to receive the piston thereon. The device includes means to center the piston so that it is axially aligned with the cylinder and to displace the piston radially of the crankshaft into and out of engagement with the cylinder. When the piston is en-



gaged within the cylinder, the device may be removed from the crankshaft to permit connection of the usual connecting rod from the piston to the crankshaft.

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3,793,719

## METHOD FOR PRODUCING TUGGED ZIP FASTENERS

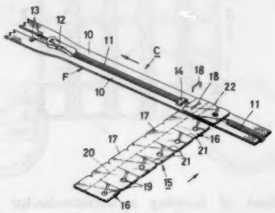
**Hiroyuki Ebata, Uozu, Japan, assignor to Yoshida Kogyo Kabushika Kaisha, Tokyo, Japan**

**Filed Mar. 7, 1972, Ser. No. 232,473**

**Claims priority, application Japan, Mar. 10, 1971, 46/12954**

**Int. Cl. B23p *11/00***

**U.S. Cl. 29—408** **4 Claims**



A method is disclosed for producing zip fasteners having applied thereon tags indicating information relative to zip fastener products. Continuous production of these zip fasteners is made possible by feeding a train of tags in a direction at right angles to the direction of movement of a zip fastener chain.

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3,793,720

## METHOD OF AND DEVICE FOR MOUNTING ELECTRIC COMPONENTS ON A MOUNTING PANEL

**Henri Carel Haverkorn Van Rijsewijk; Ludovicus Megens, and Gerard Hendrik Oskam, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Mar. 29, 1972, Ser. No. 239,209**

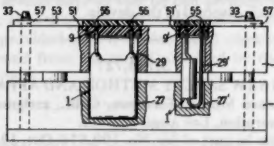
**Claims priority, application Netherlands, Apr. 9, 1971, 7104836**

**Int. Cl. H05k *3/30***

**U.S. Cl. 29—626** **5 Claims**

A method of and device for mounting electric components on a mounting panel in which the components are provided in recesses of a dual jig and their connection wires are forced into the apertures of a mounting panel. During mounting, the connection wires are held at pitch and are accurately positioned relative to the recesses. Each component is provided

with a sliding block surrounding the ends of the connection wires and the circumference of which corresponds to the circumference of a recess in the jig. By moving the two parts of



the jig against each other, the sliding block is moved relative to the connection wires so that the ends thereof are freed and are forced into the apertures of the mounting panel.

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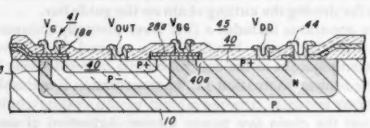
**3,793,721**
**INTEGRATED CIRCUIT AND METHOD OF FABRICATION**

**Robert H. Wakefield, and James A. Cunningham, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Aug. 2, 1971, Ser. No. 168,294**
**Int. Cl. B01j** *17/00*
**U.S. Cl. 29—571** **14 Claims**



An insulated gate field effect transistor inverter and method of fabrication is disclosed. The invention comprises two field effect transistors integrated on a semiconductor substrate. The configuration has a common source and is thus compatible with integrated circuit fabrication processes. The channel length of one of the two field effect transistors is made extremely small utilizing the method of the invention, enabling significant reduction in size of the inverter. In accordance with this method the channel length is determined by the distance between two accurately controlled diffusions, rather than conventional photolithographic techniques.

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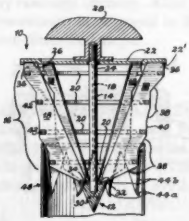
**3,793,722**
**CAN OPENER**

**Telford C. Hill, Jr., 1216 E. Quaker Rd., E. Aurora, N.Y. 14052**

**Filed Dec. 7, 1972, Ser. No. 313,120**
**Int. Cl. B65b** *7/24*; **B26b** *27/00*
**U.S. Cl. 30—6.1** **12 Claims**



A manually operable can opener for opening a can top when forced thereinto including a plurality of cutting blades radiating from a cutter center line or axis extending through a piercing point and a plurality of deflector rings of progressively increasing size spaced along such axis and successively operable to increase the size of a starting hole formed in the can top by the piercing point.

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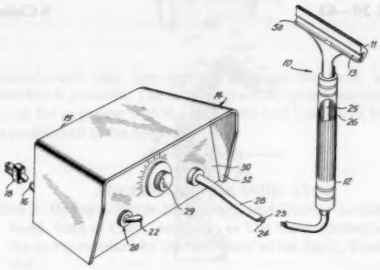
**3,793,723**
**ULTRASONIC REPLACEABLE SHAVING HEAD AND RAZOR**

**Arthur Kuris, Riverdale; Lewis Balamuth, New York, and Anthony P. Farina, Centereach, all of N.Y., assignors to Ultrasonic Systems, Inc., Farmingdale, N.J.**

**Filed Dec. 3, 1971, Ser. No. 204,632**
**Int. Cl. H01v** *7/00*; **B26b** *21/00*
**U.S. Cl. 30—45** **58 Claims**



A shaving head for use, in combination with a handle containing an ultrasonic motor, said head including a blade disposed therein and mounted therein in a manner to be ultransonically vibrated with the head detachably and rigidly coupled to the ultrasonic motor.

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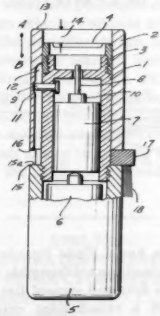
**3,793,724**
**A DRYSHAVER WITH AN ADJUSTABLE PROTECTIVE SLEEVE**

**Werner Messinger, Kronberg; Klaus Zimmerman, Bremthal, and Florian Seiffert, Oberhochstadt, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany**

**Filed June 7, 1972, Ser. No. 263,355**
**Claims priority, application Germany, Feb. 5, 1972, P 22 05 421.3**
**Int. Cl. B26b** *19/38, 19/48*
**U.S. Cl. 30—41** **10 Claims**



A dryshaver has a rod-shaped housing provided at one end with a shear head which is driven by an electromotor. A protective sleeve surrounds a portion of the housing and can be

axially displaced between two positions in one of which it is retracted rearwardly of the shear head and in the other of which it projects forwardly of the shear head to protect the same. An actuator button of a switch for the current supply to the motor is interconnected with the sleeve to prevent the same from being withdrawn off the housing and is displaced in response to shifting of the sleeve to circuit making or breaking.

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**3,793,725**

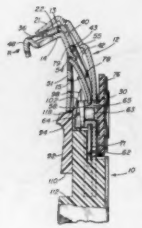
**ADJUSTABLE SAFETY RAZOR**

**Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plaines, N.J.**

**Filed Sept. 14, 1972, Ser. No. 289,031**

**Int. Cl. B26b *21/24***

**U.S. Cl. 30—63** **6 Claims**



The specific embodiment provides a safety razor comprising a guard member pivotally mounted with respect to means for releasably engaging a single cutting edge blade. The guard member includes a transverse guard surface and a cam follower portion. A cam is provided for engagement with the cam follower, and a spring biases the cam follower into abutting engagement with the cam whereby movement of the cam pivots the guard surface with respect to the blade to adjust the shave angle. The embodiment also provides means movable with respect to the cam and cam follower for pivoting the cam follower out of engagement with the cam and for positioning the guard surface in front of the cutting edge of the blade.

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**3,793,726**

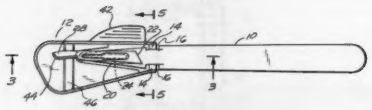
**STERILE DISPOSABLE SCALPEL**

**George I. Schrank, Woodcliff Lake, N.J., assignor to Becton, Dickinson & Company, East Rutherford, N.J.**

**Filed June 7, 1972, Ser. No. 260,494**

**Int. Cl. A61b *17/32***

**U.S. Cl. 30—151** **4 Claims**



A molded handle has a blade attached to and extending from one end and a blade guard frangibly attached to the same end. The guard has first and second flat surfaces formed on opposite sides with a raised edge extending substantially around the periphery of each surface. The first flat surface is contiguous with one side of the blade and extends beyond the blade so that the raised edge of the guard protects the edge of the blade. A pressure tab is molded onto the guard and is disposed remotely from a sharpened edge of the blade to facilitate safe removal of the guard from the handle. A retainer bar is formed adjacent to but spaced from the second flat surface to define a narrow slot between the bar and the second surface into which the blade is inserted after use to provide for safe disposal of the device.

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**3,793,727**

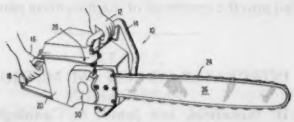
**CHAIN SAW SAFETY METHOD AND APPARATUS**

**Harold Edward Moore, Torrance, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.**

**Continuation-in-part of Ser. No. 190,574, Oct. 19, 1971. This application Oct. 4, 1972, Ser. No. 294,866**

**Int. Cl. B27b *17/02, 17/10***

**U.S. Cl. 30—383** **10 Claims**



A method and apparatus for preventing injury to an operator of a chain saw of the type having a frame, a frame handle, a control handle, a guide bar, a cutting chain and power means mounted on the frame and operably connected to the cutting chain for driving the cutting chain on the guide bar.

The apparatus includes a first lever pivotally mounted adjacent to the frame handle and a second lever pivotally mounted adjacent to the control handle. A self-locking brake is biased toward actuation and upon actuation is operably sufficient to instantly stop movement of the cutting chain and stall out the chain saw power means. Actuation of the self-locking brake is controlled by engaging the first and second levers against the frame and control handles respectively. This engagement is translated through a linkage system to overcome the aforementioned bias and disengage the self-locking brake. Upon release of either the first or second levers, or both, from engagement with the frame or control handles respectively the brake will be immediately actuated.

The method includes the steps of controlling the actuation of a self-locking brake and actuating the brake in the event an operator's hand slips from either the frame handle or the control handle. If such an event occurs the method includes braking the cutting chain to an immediate stop and thus minimizing the possibility of injury to the operator.

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**3,793,728**

**METHOD OF FASHIONING A DENTAL PROSTHESIS DEVICE AND A TEMPORARY PROSTHESIS DEVICE TO PUT THIS METHOD INTO EFFECT**

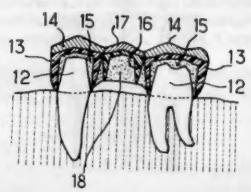
**Jean G. Corbineau, 33, rue du Commerce, Paris, France**

**Filed Mar. 23, 1972, Ser. No. 237,489**

**Claims priority, application France, Mar. 25, 1971, 7110646**

**Int. Cl. A61c *12/22***

**U.S. Cl. 32—6** **4 Claims**



A method of making a dental prosthesis device, and an improved device for use as a temporary prosthesis device. A tem-

porary prosthesis device is formed by placing a cap on a tooth-stump, which cap is topped by a soft metal chewing surface. The temporary prosthesis device remains in the patient's mouth for several days so that he can perform the action of chewing, so as to shape the soft metal surface. A final prosthesis device provided with a harder metal chewing surface is then fashioned from the model provided by the soft metal chewing surface.

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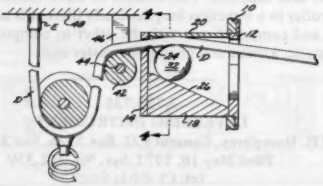
**3,793,729**

## GRIPPING DEVICE ASSEMBLY FOR TENSIONED PLIABLE ELONGATE MEMBER

**Robert P. Nyboer, 2016 Calle Candela, Fullerton, Calif. 92632**

**Filed Sept. 22, 1972, Ser. No. 291,313**
**Int. Cl. A61c** *1/00*
**U.S. Cl. 32—23** **9 Claims**



An assembly that is preferably used in conjunction with a hand-holdable instrument that has an elongate pliable member extending therefrom to a source of power that serves to actuate the instrument.

The assembly includes a housing that is located in a fixed base position relative to the source of power, and the housing having the elongate pliable member extending through a confined space therein. The confined space is partially defined in the housing by a top and a bottom, with the bottom including an inclined surface on which a rotatable member is movably supported. Means for maintaining tension on the elongate pliable member are disposed between the source of power and the housing.

The housing is preferably capable of removably supporting the instrument at a first position thereon. When the instrument is moved outwardly from the housing without the pliable elongate member contacting the rotatable member, tension is maintained on the elongate member until the instrument is moved downwardly to bring the elongate member into frictional contact with the rotatable member. The instrument is then allowed to move toward the housing a short distance due to the tension on the elongate member, with the rotatable member now rolling up the inclined surface to frictionally grip the pliable elongate member between the rotatable member and the top of the housing. The portion of the elongate member extending outwardly from the housing to the instrument is now free of tension and the instrument may be maneuvered without any restraint thereon. After the instrument has been used, the instrument is returned to the first position by reversing the above-described steps.

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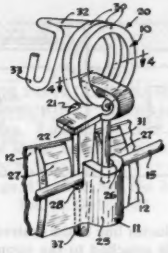
**3,793,730**

## LOCK SPRING PIN APPLIANCE

**Percy R. Begg, Adelaide, Australia, and Peter C. Kesling, La Porte, Ind., assignors to TP Laboratories, Inc., LaPorte, Ind.**

**Continuation-in-part of Ser. No. 218,910, Jan. 19, 1972, abandoned. This application May 5, 1972, Ser. No. 250,590**
**Int. Cl. A61c** *7/00*
**U.S. Cl. 32—14 A** **28 Claims**

An orthodontic appliance for use with a bracket having a pin opening and an arch wire slot, which comprises an uprighting spring and a pin coacting to lock one or more arch wires to the bracket and to apply an uprighting force to the tooth on which the bracket is mounted. The appliance includes a pin having a head, which coacts with the coil of the uprighting spring wherein the tail of the pin and the tail of the spring are received in the pin opening and the arch wire slot is



closed such that free tipping between the arch wire and bracket is possible. The lever arm of the spring terminates in a hook for engaging with the arch wire and the coil of the spring is positioned at the bracket.

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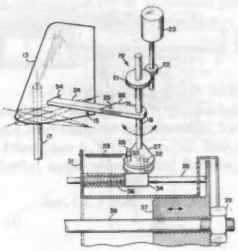
**3,793,731**

## ANGLE POSITION INDICATOR

**Eino J. Hyyppa, North Hollywood, and Chester L. Reed, Burbank, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed July 12, 1972, Ser. No. 271,100**
**Int. Cl. G01c** *1/00*
**U.S. Cl. 33—1 PT** **9 Claims**



A sensor mechanism is provided to detect movements of rudders about axes which are perpendicular to a propeller axis on a propeller-driven vehicle. Follower arms are configured to engage rudders of the propeller-driven vehicle and be moved in response to movements thereof. The followers are constrained to rotate about a fixed shaft, the rotation of which is coupled, via suitable mechanical amplifier means, to electromechanical transducer. An interlock is provided to cause the arms to engage the rudders when the mechanism is mounted on the propeller shaft and to retract the followers to inoperative position when the device is removed from the propeller shaft.

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**3,793,732**

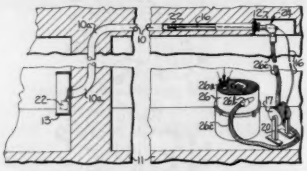
## METHOD AND APPARATUS FOR INSTALLING HEAVY ELECTRICAL CONDUCTOR LINES IN CONDUITS

**James Carver Hamrick, Matthews, N.C., assignor to Jet Line Products, Inc., Mathews, N.C.**

**Filed July 29, 1970, Ser. No. 59,244**
**Int. Cl. G01b** *3/10;* **B65h** *59/00*
**U.S. Cl. 33—137 R** **8 Claims**

A novel light-weight plastic tape with measuring indicia thereon is propelled through an electrical conduit by fluid

pressure therein, and the indicia on the tape is noted at opposite ends of the conduit to determine the desired length of a conductor line to be installed in the conduit. Thereupon, the tape is used to pull a strong pull line or rope through the conduit, a heavy conductor line of the desired pre-cut length thus determined then is attached to the strong pull line, and the pull line is used to pull the conductor line into the conduit so that the conductor line then extends throughout the length of the conduit.



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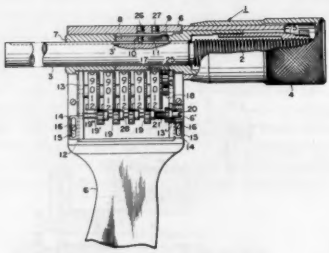
**3,793,733**

## ZERO ADJUSTING DEVICE FOR DIGITAL MICROMETER

**Goro Nishikata, Kawasaki, Japan, assignor to Yehan Numata, Yokahama, Japan**

**Filed Jan. 18, 1972, Ser. No. 218,761**
**Claims priority, application Japan, May 5, 1971, 46-37554**
**Int. Cl. G01b** *5/00*
**U.S. Cl. 33—166** **3 Claims**



A zero adjusting device for a digital micrometer comprises a spindle directly connected to a thimble and encircled by a clamp-ring rotatable with said spindle. A gear wheel is disengagably coupled to said clamp-ring by means of an adjusting screw, and an adjusting gear is adapted to be directly coupled to the first stage wheel of a digital indicator interlocked with said gear wheel to be driven thereby. The adjusting gear is spring-biassed away from the first-stage wheel.

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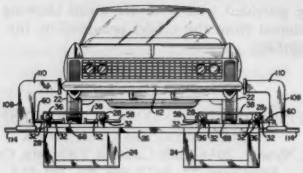
**3,793,734**

## METHOD AND APPARATUS FOR DETERMINING CASTER TRAIL

**Marcellus S. Merrill, 335 Colorado Blvd., Denver, Colo. 80206**

**Continuation of Ser. No. 821,535, Jan. 22, 1969, abandoned, which is a division of Ser. No. 499,380, Oct. 21, 1965, Pat. No. 3,494,045. This application June 25, 1971, Ser. No. 156,988. The portion of the term of this patent subsequent to Feb. 10, 1987, has been disclaimed.**
**Int. Cl. G01b** *11/26*
**U.S. Cl. 33—203.12** **14 Claims**

A method and apparatus for measuring static, kinetic and pneumatic caster trail of a steerable, vehicle mounted wheel. The apparatus includes a pair of fore and aft spaced rollers which supportingly contact the wheel at two points of reference. The rollers are mounted both for rotary and non-rotary movement about their longitudinal axis. The swinging of the wheel away from a "straight ahead" direction results in a force being distributed by the wheel to the surfaces of said supports in a direction generally parallel to the longitudinal axes of said supports. The amount of force distributed along each roller in a direction longitudinally thereof is sensed, measured and compared one with the other to compute or determine static, kinetic and pneumatic caster trail.



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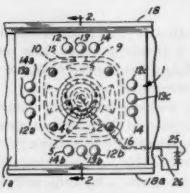
**3,793,735**

## LEVELLING INSTRUMENT

**David H. Humphrey, General P.O. Box 2226, San Juan, P.R.**

**Filed May 10, 1972, Ser. No. 252,339**
**Int. Cl. G01c** *9/00*
**U.S. Cl. 33—348** **15 Claims**



A levelling instrument wherein a level condition is indicated by the projection of a light beam within the instrument on an indicator. The light beam is projected in a constant vertical direction by a reflecting surface that is rotatable about a light source, which is focused on the indicator only when the instrument is level. The reflecting surface can comprise a pendulum mirror or a continuous circular conduit partially filled with mercury.

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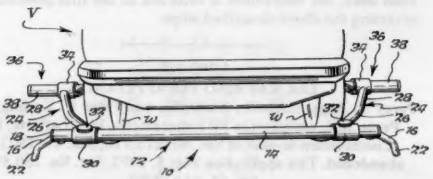
**3,793,736**

## WHEEL ALIGNMENT MEASURING APPARATUS

**Franco Cufrini, Frosinone, Italy, assignor to Allitalia Import-Export Inc., Buffalo, N.Y.**

**Filed July 21, 1972, Ser. No. 273,787**
**Int. Cl. G01b** *5/255*
**U.S. Cl. 33—203.17** **7 Claims**



A wheel alignment measuring apparatus for determining vehicle wheel camber and toe characteristics. A pair of telescopic measuring heads in the form of tubes are adjustable to

the lateral spacing of a pair of vehicle wheels. Each tubular head is provided with an axial rod projecting through the head and carrying an elongated member having spaced probes engagable with diametrically opposed points on the rim of the wheel hub. The elongated member swings to an inclined position corresponding to the inclination of the wheel relative to a true reference plane causing movement of the rod, the rear end of which serves as a pointer associated with a calibrated scale to indicate the degree of wheel inclination.

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**3,793,737**

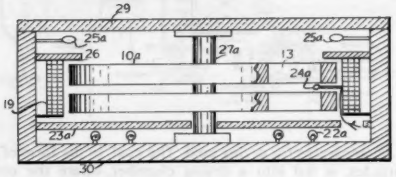
**SELF-TIMED REACTION-MASS COMPASS**

**Max Alth, 6 Tamarack Rd., Port Chester, N.Y. 10573**

**Filed Oct. 9, 1970, Ser. No. 79,557**

**Int. Cl. G01c** *17/00*

**U.S. Cl. 33—300** **2 Claims**




Two horizontal discs of identical mass and dimensions are rotated in opposite directions at identical and fixed speed. Each disc is pierced by a radial slot. Coincidence of said slots provides an index spot on a compass card. Said coincidence is independent of the device support and holds its direction in space despite support movement and rotation. The discs may be rotated by any means. A counter may be employed to read out the slot-coincidence position in degrees relative to any fixed angular position about the axis of said discs.

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**3,793,738**

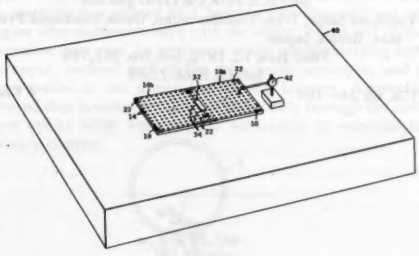
**MEASURING AND LOCATING SYSTEM COMPONENTS**

**Alexander G. Blakey, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.**

**Filed Oct. 25, 1972, Ser. No. 300,547**

**Int. Cl. G01b** *3/30, 5/14*

**U.S. Cl. 33—180 R** **5 Claims**




Components from which a measuring and locating system may be assembled and a method of assembling them are disclosed. The basic component is a thin planar tile having a plurality of openings in one surface arranged in a repeating uniform geometric pattern. The openings contain magnetic inserts having uniformly recessed upper surfaces. A contiguous array of these tiles may be assembled in which the highly accurate opening pattern continues across the entire array. Measuring and locating fixtures having ferromagnetic base protuberances arranged to conform to the insert recess shape and pattern may be removably mounted on the tile assembly to perform a wide variety of measuring and locating functions.

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**3,793,739**

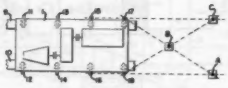
**PROCESS FOR INSTALLING BASE-MOUNTED MACHINERY SUBJECT TO MISALIGNMENT**

**Herbert N. Hoffman, Lunenburg, and Harry A. Mayer, Fitchburg, both of Mass., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Apr. 17, 1972, Ser. No. 244,409**

**Int. Cl. G01b** *5/00*

**U.S. Cl. 33—286** **3 Claims**



A machinery base carrying several rotating components is aligned on a factory foundation, prior to shipment to an installation site foundation. At the installation site, the original factory alignment is maintained by establishing the relationship of the supporting surfaces of the foundation with the equipment in place substantially identical to that of the factory condition. This is carried out by an alignment process which utilizes reference points outside of the machinery base.

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**3,793,740**

**FLUIDIZED BED PROCESS**

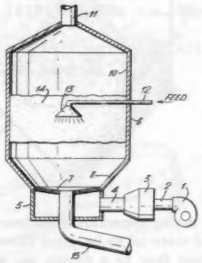
**Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Scientific and International Corporation, New York, N.Y.**

**Filed June 6, 1972, Ser. No. 260,147**

**Claims priority, application Great Britain, June 18, 1971, 28,756/71**

**Int. Cl. F26b** *17/10, 3/08*

**U.S. Cl. 34—10** **1 Claim**



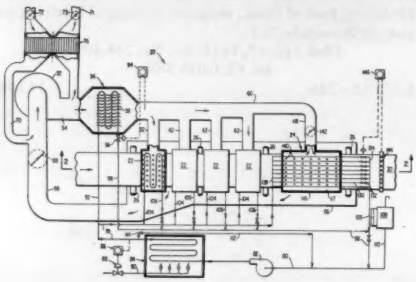

A fluidized bed process for the drying and granulation of a 50 per cent by weight aqueous solution of ammonium sulphate is carried out in a container having a conical bottom portion in which a gas is introduced, the conical bottom portion reducing the velocity of gas flowing upward therein from about 7 to 10 to about 4 to 6 feet per second to control the generation of dust.

3,793,741

## DRYING APPARATUS WITH MOISTURE PROFILE CONTROL

Horace L. Smith, Jr., Richmond, Va., assignor to Smitheen Industries, Inc., Richmond, Va.

Continuation of Ser. No. 97,943, Dec. 14, 1970, abandoned, which is a division of Ser. No. 46,704, June 16, 1970, abandoned. This application Jan. 7, 1972, Ser. No. 216,046
Int. Cl. F26b *19/00*
U.S. Cl. 34—48 17 Claims



Apparatus for drying material in web, sheet, and similar forms by a combination of radiant and convective heating in which provision is made for controlling the moisture or other volatiles profile across the width of the material being dried.

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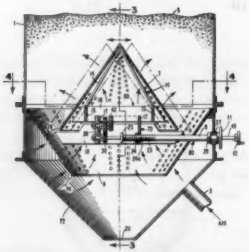
3,793,742

## HOPPER DRYER FOR PARTICULATE MATERIAL

Dewey Rainville, Westfield, N.J., and Homer C. Hek, Alexandria, Va., assignors to Universal Dynamics Corporation, Woodbridge, Va.

Filed Apr. 3, 1972, Ser. No. 240,539
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 R 30 Claims



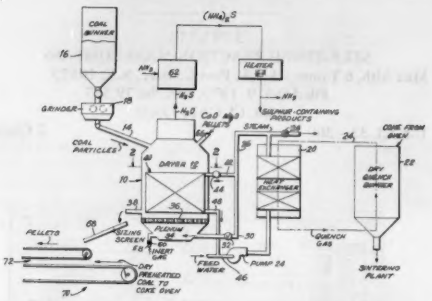
Improved drying apparatus is disclosed which maintains the even flow of material to be dried through a drying vessel in countercurrent flow to a drying gas and maintains the residence time of material in the vessel at a constant value. In prior art systems, material tends to accumulate along the periphery of the drying vessel. In accordance with the present invention, a moveable means is placed at the bottom of the drying vessel which effects a predetermined and selectable spatial non-uniformity in the flow of material through the hopper body. The improved apparatus has the effect of preventing peripheral accumulation of the material or "-hilling" in the dryer to the end that there is uniform flow and drying of the material passing therethrough.

3,793,743

## APPARATUS FOR DRYING COAL

Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

Filed Aug. 23, 1972, Ser. No. 283,155
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 A 8 Claims



An apparatus for drying coal. The coal, in the form of coal particles, is fed into a drying chamber where the coal is suspended in a fluidized bed while being dried in an atmosphere of steam which is at a temperature too low to release oxygen but high enough to extract sulphur from the coal particles. The temperature of the atmosphere in the fluidized bed where the drying of the coal takes place in regulated with heating coils which directly contact the coal particles while the latter are suspended in the fluidized bed, so that further drying is achieved by direct contact between the coal particles and the heating coils. The coal with its reduced sulphur and moisture content is taken in a preheated condition from the dryer and delivered to a coke oven to reduce the extent to which coal must be heated therein. Gas extracted from the dryer is treated to have water condensed therefrom and to extract sulphur therefrom. In addition, pellets of calcium oxide and/or magnesium oxide are delivered to the fluidized bed together with the coal particles for further extracting sulphur from the atmosphere in the fluidized bed, these pellets also being subsequently treated, as by roasting, to extract sulphur therefrom.

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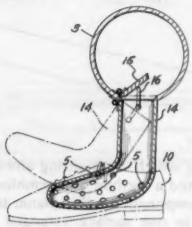
3,793,744

## DEVICE FOR DRYING SHOES

Yasufumi Saita, 7-16, Yoshihara-cho, Oaza, Fukuoaka Prefecture, Iizuka, Japan

Filed June 12, 1972, Ser. No. 261,996
Int. Cl. F26b *25/00*
U.S. Cl. 34—104 5 Claims



A device for directly drying the inside of shoes, such as bowling shoes or golf shoes, which consists of a drying box

provided with an external heater, a serpentine air inlet pipe within the box connected to said heater and provided with a plurality of perforate nozzles on which said shoes may be hung.

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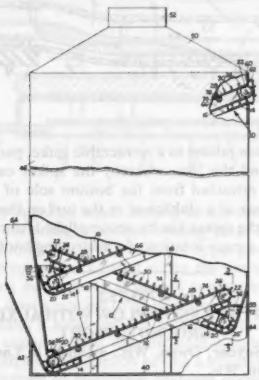
**3,793,745**
**AGGREGATE DRYER**

**Donald W. Myers, 11000 S.W. Boones Ferry Rd., Portland, Oreg. 97219**

**Filed Mar. 19, 1973, Ser. No. 342,507**
**Int. Cl. F26b** *15/20*
**U.S. Cl. 34—189** **10 Claims**



A plurality of elongated conveyors are arranged in two vertical stacks disposed side-by-side the conveyors of the first stack being spaced apart vertically and inclined upward in one direction and the conveyors of the second stack being spaced apart vertically and inclined upward in the opposite direction. The upper, outfeed end of each conveyor is positioned vertically above, but to the side of, the lower, infeed end of the next adjacent conveyor, in the downstream direction of movement of aggregate through the conveyors, and a side chute communicates the upper, outfeed end of each conveyor with the lower, infeed end of the next adjacent downstream conveyor. A source of heat is associated with the conveyors, and the assembly is confined in a housing provided with an aggregate inlet communicating with the lower, infeed end of the lowermost conveyor, an aggregate outlet communicating with the upper, outfeed end of the uppermost conveyor, and a vapor outlet at the upper end of the housing. Aggregate material thus is conveyed upward alternately through the conveyor stacks while being heated sufficiently to vaporize its moisture content.

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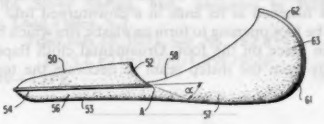
**3,793,746**
**SLIPPERS**

**Winalee Mitchell, and James G. Mitchell, both of 110 Secor Woods Ln., Perrysburg, Ohio 43551**

**Filed Aug. 29, 1972, Ser. No. 284,535**
**Int. Cl. A43b** *00/00*
**U.S. Cl. 36—2.5 R** **8 Claims**

Elastomeric slippers, having an upper blank joined to a lower blank to form a bottom sole and at least a front-of-the-foot cavity, exhibit improved tear resistance by the formation of the marginal rear edge of the upper blank in such a way as to form an acute angle with the coextensive marginal edge of the lower blank. Additional tear resistance is added when the



marginal rear edge is formed as a forwardly extending cusp so as to circumvent the upper half of the foot's instep.

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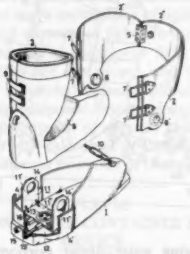
**3,793,747**
**SKI BOOT**

**Yoshinari Mochizuki, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan**

**Filed Apr. 23, 1973, Ser. No. 353,732**
**Int. Cl. A43b** *00/00*
**U.S. Cl. 36—2.5 AL** **6 Claims**



A ski boot is provided which comprises a rigid upper shell, a rigid lower shell, an inner and an outer pivot means for pivotal movement of the upper shell with respect to the lower shell, the inner pivot means locating nearer to the boot toe than the outer pivot means, and means for slightly adjusting the position of at least one of the inner and outer pivot means substantially along horizontal plane.

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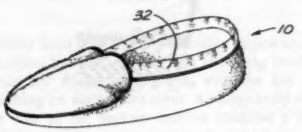
**3,793,748**
**FOOT COVERING**

**Verna Lee Pursley, 11194 Magnolia Ave., Riverside, Calif. 92505**

**Filed May 4, 1972, Ser. No. 250,431**
**Int. Cl. A43b** *1/02*
**U.S. Cl. 36—9 R** **4 Claims**



Soft, absorbent slippers suitable for wear by women around the house. Each slipper is made from a single square of terrycloth which has been folded in half, with the loose edges up, and then sewn into the general shape of the slipper. This sewing is accomplished by means of three seams, a curving heel seam at the right end of the folded cloth, a short diagonal toe seam at the lower left corner of the cloth and a longer diagonal

instep seam running upwardly from the toe seam to a point near the top edges of the cloth halves. Between the tops of the instep seam and the heel seam the edges of the folded cloth halves are left free to form an opening for the foot. A strip of elastic is fastened at its ends in a downturned fold of cloth around the foot opening to form an elastic rim which holds the slipper in place on the foot. Ornamental cloth flaps extend outwardly from the instep seam to decorate the top of the slipper.

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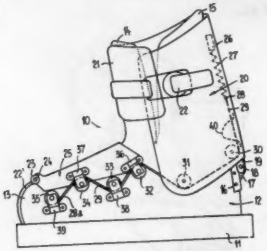
**3,793,749**
**SKI BOOT**

**Ernst Gertsch, Wengen, and Ulrich Gertsch, Interlaken, both of Switzerland, assignors to Gertsch AG, Interlaken, Switzerland**

**Filed Apr. 9, 1973, Ser. No. 349,287**
**Claims priority, application Great Britain, Apr. 17, 1972, 17568/72**
**Int. Cl. A43b *00/00***
**U.S. Cl. 36—2.5 AL** **13 Claims**



A ski boot having outer upper portions which can be pivoted about hinges with regard to the sole of the ski boot from an open position into a closed position. The outer upper portion arranged at the region of the vamp and the outer upper portion arranged at the region of the quarter are coupled to one another by means of at least one rope- or cable traction element which transmits the closing movement of the one outer upper portion as a closing movement to the other outer upper portion.

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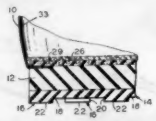
**3,793,750**
**ATHLETIC SHOE FOR ARTIFICIAL TURF**

**William J. Bowerman, Eugene, Oreg., assignor to BRS, Inc., Tigard, Oreg.**

**Filed Aug. 30, 1972, Ser. No. 284,736**
**Int. Cl. A43b *23/28***
**U.S. Cl. 36—59 C** **14 Claims**



An athletic shoe suitable for use on artificial turf is described including an improved upper of a porous multiple layer construction and an improved sole having integral polygon shaped studs. The upper is preferably made of nylon tricot fabric outer layer, a polyurethane foam middle layer, and a porous synthetic fabric inner layer. This greatly reduces the weight of a football shoe made in accordance with the invention so that it is approximately one-half the weight of a conventional leather football shoe as well as providing great comfort and enabling use in wet weather without damage. The sole has short multi-sided polygon shaped studs of square, rectangular or triangle cross section, having a plurality of flat sides which provide gripping edges that give greatly improved traction.

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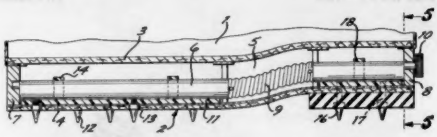
**3,793,751**
**RETRACTABLE SPIKE GOLF SHOE**

**Ambrose L. Gordos, 4301 E. 2nd St., Apt. 1E, Long Beach, Calif. 90803**

**Filed Apr. 5, 1971, Ser. No. 131,292**
**Int. Cl. A43c *15/00*; A43b *00/00***
**U.S. Cl. 36—61** **3 Claims**



This invention relates to a retractable spike, particularly for a golf shoe and the like, whereby the spikes can be either protruded or retracted from the bottom sole of the shoe to protect the floor of a clubhouse or the turf on the green. This movement of the spikes can be accomplished from the outside of the shoe by a mere rotation of a protruding knob.

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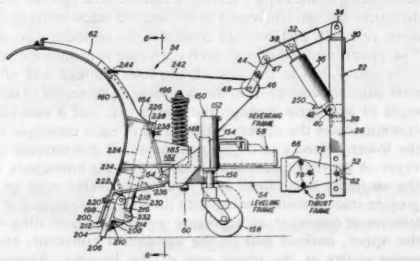
**3,793,752**
**CONVERTIBLE SNOW PLOW WITH AUXILIARY GROUND SUPPORT**

**Roderick C. Snyder, Owen, Wis., assignor to Loed Corporation, Wausau, Wis.**

**Filed Dec. 29, 1972, Ser. No. 319,895**
**Int. Cl. E01h *5/04***
**U.S. Cl. 37—42 R** **7 Claims**



A snow plow attachable to the front of a truck or other vehicle. A moldboard assembly is supported by hydraulic jacks on ground-engaging members such as caster wheels or shoes and is connected by a thrust frame to a hitch on the vehicle. A moldboard has two separate blades each having a ground-engageable scraping edge. One blade is steel, fixed along the lower portion of the moldboard. The other blade is rubber-like and is movable to an extended, working position below the steel blade, enabling it to act as a squeegee to clear soft snow and slush. The rubber-like blade is also movable to a stowed position above the scraping edge of the steel blade, enabling the steel blade to engage the ground when a harder, general purpose cutting edge is required. Pressure applied to the hydraulic jacks exerts a lifting force on the moldboard assembly through the ground-engaging members. Pressure is regulated by a relief valve which is adjustable to transfer a definite, predetermined portion of the moldboard assembly

weight to the ground-engaging members. By adjusting the relief valve, heavy cutting pressure, or light squeegee pressure, may be applied through the moldboard assembly as required by the steel or rubber-like blade.

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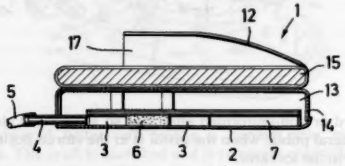
3,793,753

## HAND OPERATED STEAMING AND IRONING DEVICE

Wilhelm Engelbart, Seelscheid-Nackhausen, Germany, assignor to Hoffman Rheem Maschinen GmbH, Cologne, Germany

Filed July 31, 1972, Ser. No. 276,542
Claims priority, application Germany, July 31, 1971, 2138491
Int. Cl. D06f *75/06, 79/00*
U.S. Cl. 38—77.6 13 Claims




A manually operated steam ironing device comprises a bottom portion including a bottom ironing plate having outlet openings to allow passage of steam. An upper portion includes a hand receiving means located above the ironing plate. The hand receiving means has a structural configuration effective to enwrap at least a portion of an operator's hand for protecting the operator's hand and to facilitate operation of the device. The upper portion also includes a padded insulated layer and a carrier plate portion having a structural configuration which defines an insulating chamber above the bottom heating plate. The bottom portion includes a heating element and a heated cover plate carrying said element. The cover plate has a structural configuration to form a steam expansion chamber between itself and the bottom ironing plate.

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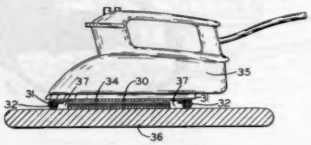
3,793,754

## APPARATUS FOR STEAM CONDITIONING TEXTILE ARTICLES

John F. Harms, 6418 Stonybrook Dr., Fort Wayne, Ind. 46815

Filed Feb. 3, 1972, Ser. No. 223,244
Int. Cl. D06f *79/00*
U.S. Cl. 38—141 2 Claims



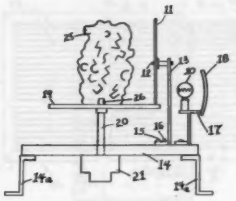

A method and apparatus for steam conditioning articles, such as neckties and cravats and napped belts and napped fabrics, in which the article to be treated is disposed in a cavity located between a pair of spaced supporting members on which a heated pressing iron is adapted to be supported in relatively closed spaced relation to the article being pressed. The device supporting the iron may include a pressing cloth engaged by the iron that may be moistened for the generation of steam and either with or without the pressing cloth the iron is advantageously a steam type iron. The arrangement prevents the sole of the iron from pressing directly on the article being treated and thereby prevents deformation of the nap on the article or the forming of sharp wrinkles or creases therein.

3,793,755

## ILLUMINATED DISPLAY APPARATUS

William R. Gersch, Long Valley, N.J., and Sheldon H. Lebowitz, Silver Spring, Md., assignors to William R. Gersch, Long Valley, N.J.

Filed July 15, 1971, Ser. No. 162,879
Int. Cl. F21p *03/00*; G09f *19/20*
U.S. Cl. 40—132 E 3 Claims




Apparatus for producing moving light patterns comprising a light source, a three-dimensional rotatable and light transmitting member having a multiplicity of light transmitting surfaces and mounted to receive light from the source and a rotatable wheel having multi-colored light transmitting segments mounted between the source and the member. The member may be a molded mass, a plurality of differently shaped or differently disposed objects secured together, a vessel with an irregular interior or exterior surface and/or filled, or partially filled, with said objects. Preferably, the wheel is rotated at a rate different from that of the member.

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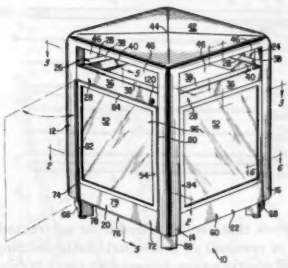
3,793,756

## COMBINATION LITTER CONTAINER AND DISPLAY DEVICE

Walter Kay, Arlington, Va., and Raymond M. Poelvoorde, Birmingham, Mich., assignors to Walter Kay, Arlington, Va.

Filed Dec. 11, 1972, Ser. No. 313,733
Int. Cl. G09f *23/00*
U.S. Cl. 40—306 11 Claims



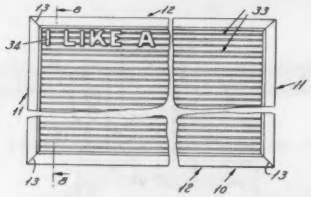
A combination litter container and display device includes a four sided housing having a top section receiving trash and a bottom section for displaying posters, with the top section having an opening on each of its sides. An outwardly opening door on one side of the bottom section contains a backing plate. A window panel is provided on each of the four sides of the bottom section with one of the window panels being mounted in the door in front of the backing plate to form an opening therewith for receiving a display poster. A hinged frame is provided in back of and cooperating with each of the three remaining window panels. Each frame has means for receiving a display poster from its side and is movable between a first position where the frame overlies the window panel and a second position where the frame is swung inwardly into the housing so that a display poster can be inserted into it when the side door is opened.

3,793,757

## SIGN BOARD

George E. Jaquillard, 27600 Lathrup, Lathrup Village, Mich. 48076

Filed Apr. 3, 1973, Ser. No. 347,467
Int. Cl. G09f 7/02
U.S. Cl. 40—142 6 Claims




A double-sided display sign for use by gas stations and the like. The sign is made from a plurality of rolled metal sections. A first set of rolled metal sections are assembled to form a rectangular frame. A double-sided sign board is mounted within the frame and is fabricated from a plurality of two differently shaped rolled metal sections to provide a plurality of vertically spaced, horizontal display element support members on each side of the sign board. Display elements are releasably attached to said support members by attachment clips.

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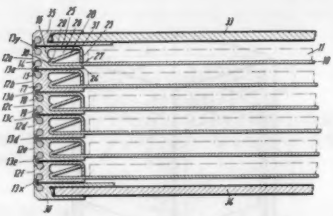
3,793,758

## DISPLAY BOOK

Johann Feldhusen, Bremen, and Carsten Langhorst, Lilienthal, both of Germany, assignors to Carsten Langhorst, Einstmannstrasse, Germany

Filed Feb. 22, 1972, Ser. No. 228,002
Claims priority, application Germany, June 12, 1971, P 21 29 317.4; July 7, 1971, P 21 33 670.9
Int. Cl. G09f 11/06
U.S. Cl. 40—102 14 Claims



A display book that can be added to or subtracted from by the addition or removal of individual plastic holding units is provided. Stiff plastic pages designed to carry textile samples are fastened in the holding units by simply bending their edges greater than 90°. The holding units have a pair of bores for receiving a flexible plastic lock member. The plastic lock member also attaches the covers to the book and if desired a pair of locking lid members.

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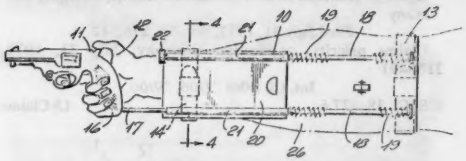
3,793,759

## CONCEALED PISTOL MOUNTING

Emmett S. Deckard, Corpus Christi, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 29, 1972, Ser. No. 239,294
Int. Cl. F41c 27/00
U.S. Cl. 42—1 K 1 Claim

A pistol mounting, adaptable for fastening about the forearm by means of attached straps, with compression spring propelled means to snap the pistol, attached to said mounting, into the wearer's hand for immediate use of the pistol. The entire device may be concealed inside the arm sleeve of a security guard or non-uniformed attendant so as to avoid alarming the general public when the pistol is in the stored position attached to the forearm.



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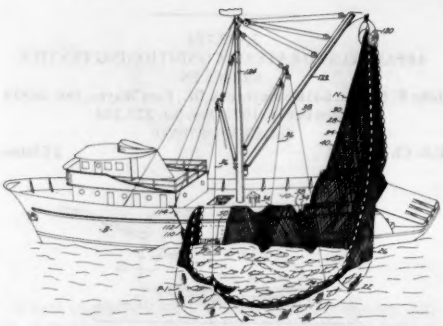
3,793,760

## FISH LOADING METHOD

Mario J. Puretic, 259-6th Ave., N. Monte Cristo Isle, Tierra Verde, Fla. 33715

Filed May 20, 1971, Ser. No. 145,245
Int. Cl. A01k 73/12
U.S. Cl. 43—4.5 2 Claims

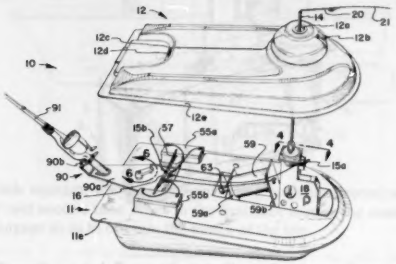


A fish loading method for transferring fish from a net gathered alongside a fishing boat into the hold of the fishing boat. The method includes providing a fish receiving aperture formed in the side of the boat adjacent the boat's water-line. A gate normally closes this aperture, with the gate being opened during a loading operation. A conveyor belt leads from the aperture to a deck of the boat. A power-operated pressure bar is movable vertically in the aperture and in its lower position wedges a portion of the net during a loading operation. The remaining portion of the net is progressively raised and gathered towards the aperture so as to progressively float fish from the net into and through the fish receiving aperture. The conveyor belt then moves the fish upwardly and inboard for transfer to the boat's hold or holds.

## 3,793,761
## REMOTELY STEERED TROLLER

Ralph D. Bonham, 381 W. Center, Pleasant Grove, Utah 84062

Filed May 28, 1971, Ser. No. 147,755
Int. Cl. A01k 85/06
U.S. Cl. 43—26.1 7 Claims



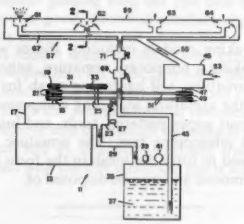
A powered watercraft having a fishing pole mounted thereon. The craft is launched and is remotely controlled by a stationary operator and is powered by rechargeable electric batteries which drive an electric motor to turn a propeller. A retractable line extends from the operator to a directional control mast on the craft such that a tug or jerk on the line connected to the mast, from any direction, operates a mechanical linkage, thereby changing the relative position of a directional rudder beneath the rear portion of the craft.

Each time the mast is pivoted, the position of the rudder is changed through one step in a series of indexed angular attitudes. Thus, the direction of travel of the craft is remotely controlled by the operator, pivoting the mast to the extent necessary to achieve a desired direction.

## 3,793,762
## LOW VOLUME INSECTICIDE AEROSOL GENERATOR

George S. Stains, 45-655 Mohawk Cir., Indian Wells, Calif. 92260

Division of Ser. No. 8,574, Feb. 4, 1970, Pat. No. 3,648,401.
This application July 2, 1971, Ser. No. 159,318
Int. Cl. A01m 7/00
U.S. Cl. 43—124 5 Claims

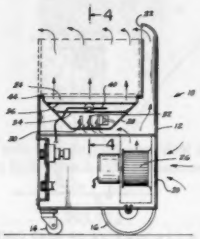


A method of producing an insecticide spray for killing insects with droplets in the size range of from about 5 microns to about 15 microns. The spray consists of an insecticide, such as Naled-14, diluted with a non-volatile liquid, such as cottonseed oil, in a ratio of 1 to 4 by volume. The aerosol generating equipment includes an engine driven blower supplying air at about 450 cubic feet per minute at a pressure of about 4 psi. This air is supplied to a group of four air-liquid double vortical nozzles that atomizes the insecticide into the 5 to 15 micron size range.

## 3,793,763
## INSECTICIDE DISPENSER

Charles D. Griffin; Murray L. Young, and James E. Griffin, all of Brookshire, Tex., assignors to H. T. McGill, Inc., Brookshire, Tex.

Filed Dec. 27, 1971, Ser. No. 212,237
Int. Cl. A01m 1/20
U.S. Cl. 43—129 10 Claims

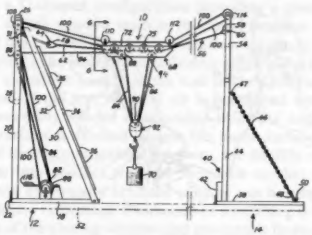


An insecticide dispenser having a housing with a blower mounted therein and an offset thereon for receiving an insecticide pellet container, the housing defining two outlets for said blower one extending to said offset to direct flow through said container and the other outlet being directed to intercept flow out of said container, means for controlling the flow to said outlets, a heater in said housing to heat the air flowing to said containers, means for controlling the heater responsive to the temperature of gas flowing through said container, a heater shield, a manual reset excess temperature cut-off being so mounted in said housing to prevent its ready resetting and a timer for controlling operation of said blower and said heater.

## 3,793,764
## TOY MACHINE FOR BUILDING DAMS AND LIKE PURPOSES

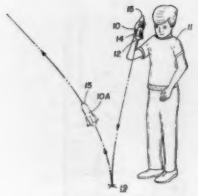
Harvey J. Gagnon, Sr., Star Route 2, Box 944, Trail, Oreg. 97541

Filed Dec. 17, 1971, Ser. No. 209,252
Int. Cl. A63h 33/30
U.S. Cl. 46—40 8 Claims



A toy for building dams and like purposes is inexpensively provided which includes two spaced standards, a fixed carrier supporting line that extends between the tops of the standards, a bucket carrier operable along the carrier line, and means operable from a fixed remote control station for selectively driving the carrier back and forth along the carrier line or raising and lowering the bucket relative to the carrier while the carrier, itself, remains stationary. The raising and lowering mechanism desirably comprises a windlass which winds in and pays out a raising and lowering cable so long as the carrier remains idle. A carrier drive pulley, coaxial with the drum, may be clutched to the windlass drum for rotation in unison with the drum. When this is done the bucket is moved horizontally by and with the carrier.

3,793,765
**BOUNCING TOY ROCKET**
Martin L. Schatz, Chicago, Ill., assignor to The Raymond Lee Organization, New York, N.Y., a part interest
Filed Nov. 2, 1972, Ser. No. 303,237
Int. Cl. A63h 27/00
U.S. Cl. 46—74 A 1 Claim



A toy in the shape of a space rocket, which is powered by a spring in the tail section which is in contact with a ball which protrudes out of the rear of the tail section. Throwing the rocket, tail-first towards the ground, results in the bouncing of said ball and spring so as to shoot the rocket, nose-first, up into the air. The nose section of the rocket is weighted so as to cause the rocket in flight to level off and then fall nose-first into the ground.

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3,793,766
**TELEPHONE-TALKING FIGURE TOY SIMULATOR**
Leonard R. Moquin, Los Angeles, and Jurgis Sapkus, Manhattan Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 21, 1972, Ser. No. 282,886. The portion of the term of this patent subsequent to Nov. 14, 1989, has been disclaimed.
Int. Cl. A63h 5/00
U.S. Cl. 46—232 12 Claims

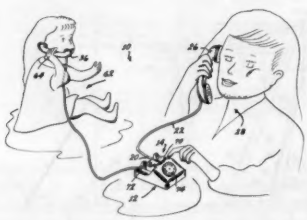
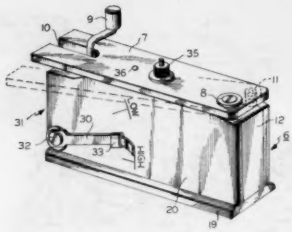


Figure toy holds a first simulated telephone handset camouflaging a switch or other electrical connection to an electric phonograph in the figure toy or in a toy telephone having a second simulated handset through which sounds may be transmitted from the phonograph to a child-user. When the phonograph is in the figure toy, these sounds are picked up by the first simulated handset which is connected to the second simulated handset. When the phonograph is in the telephone, sounds are picked up directly by the second simulated handset through a hollow tube having one end provided with a sound-pick-up horn mounted in the telephone over the phonograph speaker and another end connected to the receiver portion of the second simulated handset.

3,793,767
**CRANK OPERATED REEDLESS TURKEY CALL**
John Lindell Pulley, Centerville, Mo. 63633
Filed Oct. 25, 1972, Ser. No. 300,592
Int. Cl. A63h 5/00
U.S. Cl. 46—189 12 Claims



A crank operated reedless turkey call has a vibratable sounding board as one wall of a box with an extending edge accessible to rub against the lower surface of a spring biased lid pivoted at one corner of the box and moved by a crank over a predetermined degree of rubbing motion. The sound is produced over half of the crank cycle during the frictional contact between the edge and the lid when the lid is moved in the one direction toward the inside of the box and no sound is produced as it is returned in the opposite direction.

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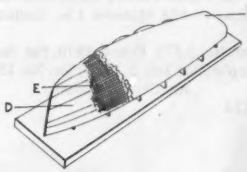
3,793,768
**MODEL KIT INCLUDING TEMPORARY ARMATURE**
Richard A. Surving, 44 Pammer Ave., Staten Island, N.Y. 10304
Filed May 26, 1972, Ser. No. 257,226
Int. Cl. A63h 33/42, 23/02
U.S. Cl. 46—1 R 1 Claim



A kit for making models including sheets with cut outs thereon for making a temporary armature, adhesive tape for covering the armature, self-hardening mesh for forming the model around the armature, modeling compound for coating the model, cutout paper patterns, tools, and instructions, all contained in a telescoping box. The armature and its tape covering are used to form the mesh in the form of the model and are then removed and may be disposed of.

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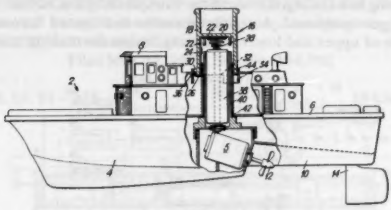
3,793,769
**BATTERY POWERED TOYS**
Duncan Tong, Hong Kong, assignor to Playart Limited, Hong Kong, Hong Kong
Filed Feb. 16, 1973, Ser. No. 333,021
Claims priority, application Great Britain, Mar. 2, 1972, 9,881/72
Int. Cl. A63h 23/04
U.S. Cl. 46—243 MV 5 Claims

A battery powered toy or model in which the battery compartment is formed as a cylinder comprising at least two telescopically inter-engaging or nesting tubes, a first tube being

located in the body of the toy and carrying a first electrical switch contact and a second tube carrying a second electrical switch contact, the arrangement being such that rotation of the said second tube on or in the first tube causes the contact to engage so as to operate the motor of the toy.



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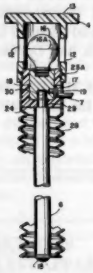
**3,793,770**
**WORM ROD**

George Johnson, 606 S. High St., Galena, Ill. 61036

Filed Nov. 1, 1972, Ser. No. 302,765
Int. Cl. A01m *19/00*
U.S. Cl. 47—1.3 4 Claims



An improved worm rod for forcing worms and insects out of moist ground thru insertion of the rod into the ground or soil and electric current passing thru the rod into the ground, a rigid straight rod of good electrical conductivity such as aluminum, brass or copper. One end of the worm rod is a hard and high impact handle made of plastic with excellent electrical insulating properties. An indicator bulb that signals the user the rod is functioning properly is provided for in the handle. Means for electrical and mechanical connections are provided. A thin flexible and collapsible cylindrical plastic shield for the electrical rod to safeguard the user from accidently coming in contact with the live electrical rod is also provided.

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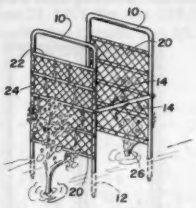
**3,793,771**
**FOLDABLE PLANT SUPPORT**

Delia L. Slaughter, Greensboro, Ga., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 15, 1973, Ser. No. 341,371
Int. Cl. A01g *17/14, 17/06*
U.S. Cl. 47—44 1 Claim

A plant support comprising first and second vertical parallel members, each member defining an inverted U with the bottom ends of the vertical legs being pointed; hinge means secured to and extending between the members to either hold the members in extended position or to enable the members to be folded together side by side; and a vertical section of mesh secured to the front face of each of the members.



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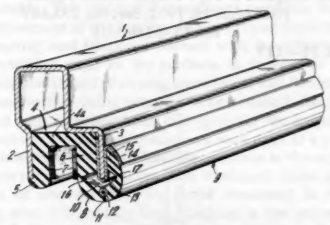
**3,793,772**
**SAFETY MOLDING FOR ELECTRICALLY ACTUATED SLIDING WINDOWS**

Herbert Kouth, Schoneck-Kilianstadten, Germany, assignor to Firma H.T. Golde GmbH

Filed Nov. 17, 1971, Ser. No. 199,598
Claims priority, application Germany, Nov. 24, 1970, G 70 43 313.5
Int. Cl. E05f *15/08*
U.S. Cl. 49—28 4 Claims



A safety molding for electrically actuated sliding windows, such as in motor vehicles, consists of an elastomeric material formed in a U-shaped configuration providing a groove into which the sliding window seats in its closed position. One of the legs of the U-shaped molding contains a longitudinally extending cavity in its interior and a flexible electrical conductor is fitted in a channel formed in the wall of the cavity adjacent the free end of the leg. A metal rib is positioned within the cavity in normally spaced relationship from the conductor. When a pressure is exerted against the outer surface of the free end of the leg containing the cavity, the flexible conductor deflects into contact with the metal rib so that a drive motor for the electrically actuated window can be stopped to avoid any injury or damage if someone or something is located in the path of the closing window and prevents it from moving into its closed position.

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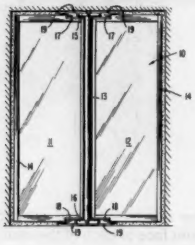
**3,793,773**
**COLLAPSING MECHANISM FOR REVOLVING DOOR WINGS**

Amuel E. Sheckells, Evansville, Ind., assignor to International Steel Company, Evansville, Ind.

Continuation-in-part of Ser. No. 161,552, July 12, 1971. This application Aug. 1, 1972, Ser. No. 277,115
Int. Cl. E06b *3/90*
U.S. Cl. 49—44 9 Claims

The right angular wings of a revolving door are secured releasably in normal radial use positions by the interlocking action of plastic plungers and cooperating notches in the

peripheries of upper and lower hanger discs on the door center shaft. The plastic plungers may be housed on the horizontal portions of upper and lower hanger bars which serve to suspend the revolving door wings pivotally from the



hanger discs. The arrangement assures safe collapsing or folding of the door wings in case of panic and prevents premature collapsing due to stack drafts found in many modern buildings or jarring by a user of the door.

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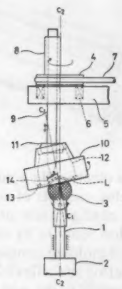
**3,793,774**

**APPARATUS FOR GRINDING INNER AND OUTER CURVED SURFACES OF A CONTACT LENS BLOCK SIMULTANEOUSLY**

**Toyohiro Kawaguchi, and Isao Mizutani, both of Nagoya, Japan, assignors to Toyo Contact Lens Co., Ltd.**

**Filed Mar. 10, 1972, Ser. No. 233,667**
**Int. Cl. B24b** *5/18*
**U.S. Cl. 51—117** **6 Claims**



A method and an apparatus for grinding the inner and outer curved surfaces of a contact lens block simultaneously, wherein a member having a substantially spherical grinding head is used to grind the inner surface of the block, while a grinding abrasive having a desired contour is used to simultaneously grind the outer surface of the block, the abrasive being moved in a circle about the axis of rotation of the grinding member.

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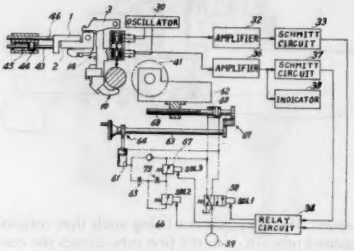
**3,793,775**

**SIZING DEVICE**

**Mineo Ishikawa, and Seiichi Oikawa, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Karsha, Kariya-shi, Aichi-ken, Japan**

**Filed Nov. 29, 1971, Ser. No. 202,868**
**Claims priority, application Japan, Dec. 3, 1970, 45/107053**
**Int. Cl. B24b** *49/04, 51/00;* **G01b** *19/12*
**U.S. Cl. 51—165.77** **9 Claims**

A sizing device for a grinding machine is provided with a pivotal member which is pivotally mounted on a supporting member which moves horizontally toward and away from a workpiece. The pivotal member pivotally mounts a measuring head at the front end thereof in such a manner that the measuring head is urged toward the workpiece by the eccentricity of gravity thereof. A contact member is mounted between a pair of upper and lower measuring feelers for making contact




with the surface of the workpiece opposite to a grinding wheel. A spring is mounted between the supporting member and the rear end of the pivotal member for urging the lower measuring feeler, mounted on the measuring head, upwardly toward the workpiece. The pivotal center of the measuring head is in a plane which passes through the points of contact of the measuring feelers with the workpiece.

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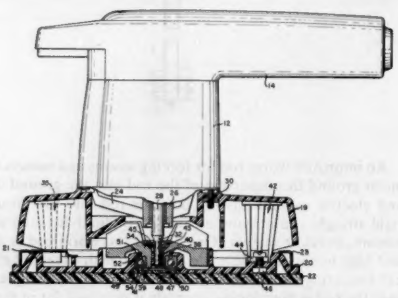
**3,793,776**

**DOUBLE INSULATED PORTABLE SANDER**

**Peter T. Sadow, Jr., Cockeysville, Md.; Gordon B. Baum, Fayetteville, N.C., and Richard L. Hurn, Baltimore, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.**

**Filed July 21, 1972, Ser. No. 273,878**
**Int. Cl. B24b** *23/04*
**U.S. Cl. 51—170 MT** **4 Claims**



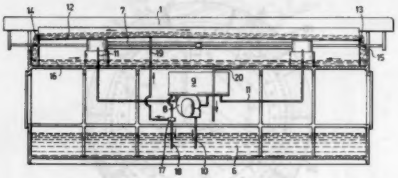
A portable sander tool of the orbital type wherein the housing is formed of insulating material, the lower end of the motor shaft being connected to a wear inhibiting sleeve drivably connected with the conventional counterbalance, together with a base plate of insulating material which is provided with a central opening for receiving a bearing having its outer race pressed into a bore in the base plate and having its inner race pressed on to a hub of the counterbalance, the central opening in the plate being sealed by a cap of insulating material thus sealing the lubricant in the bearing opening and preventing access to the bearing and shaft from the bottom of the tool to achieve double insulation, the wear inhibiting sleeve, counterbalance, base plate and bearing being permanently assembled and constituting a self-contained unit or sub-assembly adapted to be removably bolted to the housing for replacement by a new unit in the event this becomes necessary in servicing the tool.

3,793,777

## FLUID-OPERATED MACHINE TOOL WITH MEANS FOR EFFECTING UNIFORM EXPANSION OF ITS FRAME IN RESPONSE TO HEATING BY OPERATING FLUID

Edmund Lang, Babenhausen, Germany, assignor to Elb-Schliff, Babenhausen, Germany

Filed May 22, 1972, Ser. No. 254,792
Int. Cl. B24b 41/06
U.S. Cl. 51—233 10 Claims



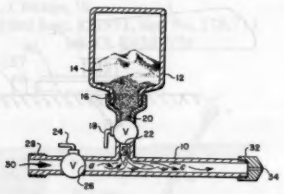
A machine tool wherein the lower portion of the frame defines a vessel for a supply of oil and the upper portion of the frame forms a bed with a pair of elongated ways for a reciprocable table. The table is movable by a double-acting cylinder and piston unit which receives oil from the vessel by way of a pump and a control valve system and discharges heated oil for return flow into the vessel. A portion of heated oil is diverted into elongated trough-shaped channels which are outwardly adjacent to the ways to heat the base and to thus prevent unequal expansion of various parts of the frame. The channels slope toward their ends and receive heated oil midway between such ends so that the oil flows toward the ends of the channels and thence into the ends of an elongated trough which is provided in the frame at a level between the channels and the vessel. The bottom surface of the trough slopes from its ends toward its median portion and the latter discharges oil into the vessel. The amount of oil which is diverted into the channels is determined by an adjustable distributor which is mounted in a return conduit connecting the vessel with the outlet of the control system.

3,793,778

## SAND BLAST APPARATUS

Richard Price, 2116 W. Patapsco Ave., Baltimore, Md. 21230

Filed Feb. 25, 1970, Ser. No. 14,167
Int. Cl. B24c 5/02, 7/00
U.S. Cl. 51—12 3 Claims



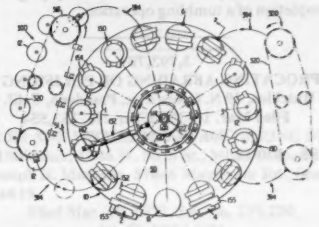
A method and the apparatus for selectively mixing sand or other solid polishing materials (such as glass beads) with a stream of pressurized fluids such as air, and then propelling them through an orifice wherein the solid material is basically under gravity feed actuation and the amount of sand that is allowed to mix with the air is controlled by a combination of a mechanical valve and the reaction of the solid material under the force of gravity to air turbulence within the pressurized system.

3,793,779

## APPARATUS FOR TREATING A SURFACE

Guido Perrella, Westmount, Quebec, Canada, assignor to DBM Industries Limited, Montreal, Quebec, Canada

Filed June 21, 1971, Ser. No. 155,151
Claims priority, application Canada, Jan. 29, 1971, 103,996
Int. Cl. B24b 7/04
U.S. Cl. 51—5 8 Claims



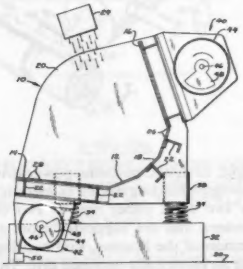
An apparatus and process are described for finishing a surface on a workpiece. At least one workpiece is rotatably supported by a chuck assembly provided on a turntable. The turntable can be indexed to advance the workpieces through one or more treatment zones. The workpieces on each chuck assembly are preferably engaged by a corresponding lapping disc that is releasably and floatingly supported by the main turntable. A pushrod assembly is provided for reciprocally moving each lapping disc in a direction radially of the rotatable turntable. This reciprocal movement combines with rotational movement of the lapping disc as derived from the floating mounting and frictional contact with the rotating workpiece, enabling wear of the surfaces in contact to be very uniformly distributed. Extreme smoothness and flatness of the workpiece surface being treated can be obtained. Each zone is provided with a recirculating conveyor for the lapping discs and a transfer mechanism that moves such discs at a predetermined time from one of the chuck assemblies to the recirculating conveyor, and vice versa. The treatment zones are independent of one another. By initial treatment in the first lapping zone followed by final finishing in the second zone, surface flatness can be obtained to within one-half of a lightwave band width of monochromatic light, for example, obtained from a sodium source.

3,793,780

## VIBRATORY CASTING TUMBLING APPARATUS

Albert Musschoot, 777 Lake Zurich Rd., Barrington, Ill. 60010

Filed Apr. 21, 1972, Ser. No. 246,231
Int. Cl. B24c 3/30
U.S. Cl. 51—14 2 Claims



A vibratory casting tumbling apparatus of the type including a generally U-shaped hopper tipped on its side which may

receive castings to be vibrated to shake loose sand particles therefrom. A first vibration imparting device is associated with the hopper so as to advance castings from along the tipped side thereof into the center of the hopper to be tumbled. A second vibratory device is associated with the hopper and is arranged with respect to the center of the gravity of the hopper and the location of the first vibratory device is such that, when energized, castings within the hopper will be advanced out of the tipped side for use in emptying the hopper upon completion of a tumbling operation.

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**3,793,781**

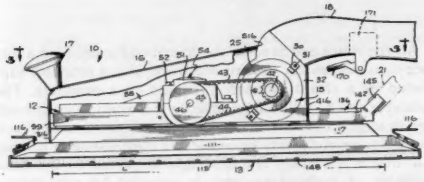
**RECIPROCATING ABRADING OR POLISHING TOOL**

**Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107**

**Filed Mar. 10, 1972, Ser. No. 233,554**

**Int. Cl. B24b** *23/00*

**U.S. Cl. 51—170 TL** **11 Claims**



A portable powered sander or the like having a hand held body carrying a rotary motor which reciprocates a working shoe structure relative to the body through a crank element and connecting rod, and which oppositely reciprocates a counterweight relative to the body through a second rotary crank element and connecting rod.

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**3,793,782**

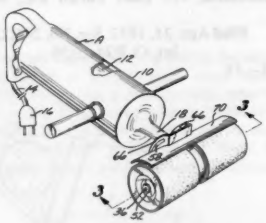
**POWER DRIVEN SURFACE FINISHING DEVICE**

**Dan P. Bowling, 2625 Colt Rd., San Pedro, Calif. 90732**

**Filed Apr. 6, 1972, Ser. No. 241,733**

**Int. Cl. B24b** *23/02*

**U.S. Cl. 51—170 PT** **5 Claims**



A lightweight, compact, portable, power-driven device that includes an elongate housing having an electric motor therein, which motor can drive either one or two circular surface finishing members that are supported from a forwardly extending extension of the housing, said housing and motor, if desired, being an electrically operated drill. The device is particularly adapted for use in close quarters where it is difficult, if not impossible, to use conventional surface finishing power tools.

**3,793,783**

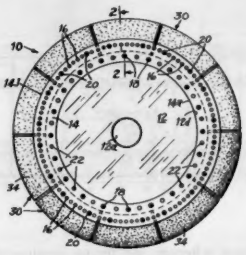
**SEGMENTAL CUT-OFF GRINDING WHEEL**

**Joseph J. Paterno, Jr., Sterling Junction; Norton S. Remmer, Worcester, and Hussain G. Lakhani, Holden, all of Mass., assignors to Norton Company, Worcester, Mass.**

**Filed Oct. 2, 1972, Ser. No. 294,083**

**Int. Cl. B24d** *5/06, 5/08*

**U.S. Cl. 51—206.5** **10 Claims**



A relatively large diameter high speed segmental cut-off grinding wheel and identical, interchangeable, and replaceable composite arcuate abrasive segments therefor each comprised of a fiber glass reinforced resin bonded abrasive portion resin bonded to an embedded portion of a relatively thin preformed segment base member made of metal or laminated fiber glass material adapted for easy removal and fastening of the abrasive segment to a thin reusable drive center with precision segment locating and retaining member thereon and a removable annular segment clamping ring fastened to the center.

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**3,793,784**

**PROTECTIVE DEVICE FOR CUTTING MACHINES**

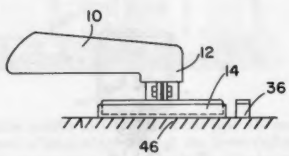
**Fritz Jetzt, Melanchtonstrasse 21,, Munich, Germany**

**Filed July 21, 1971, Ser. No. 164,679**

**Claims priority, application Germany, July 29, 1970, G 70 28 588.0**

**Int. Cl. B25b** *55/04*

**U.S. Cl. 51—269** **5 Claims**



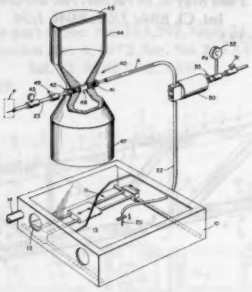

A safety device for the cutting disk of a manual cutting machine comprising a bottom part fastened to the spindle flange of the machine, which bottom part covers at least one circular surface of the disk, and a pot-like upper part which covers the other circular surface of the disk and has a flange covering the circumference of the disk, a radial recess being provided in the upper part and if need be also in the bottom part, the width of the recess being adjusted to correspond to the work piece, whereby the cutting disk is covered all around except for the recess which during operation of the machine is covered by the work piece.

3,793,785

## PARTICLE BLASTING

Frank C. Austin, Nine Meadow Rd., Rockport, Mass. 01966

Filed Jan. 15, 1973, Ser. No. 323,957
Int. Cl. B24c *3/00, 7/00*
U.S. Cl. 51—12 21 Claims



Blasting system for particles, e.g., air blast of fine abrasive particles, having an non-clogging feed device and a reliable, long-lasting on-off valve system acting upon a resilient hose. The feed device features: hourglass type particle metering into an air stream; countercurrent air percolation from air conduit through the particle metering orifice; and air turbulence at the orifice in a constant diameter region of the conduit. The valve member features: a ball member pressed against a resilient passage toward a pair of opposing ball members; adjustment devices for adjusting initial depression of each of the pair of ball members into the hose; air pressure actuation of the one ball member; and actuation increasing the depression of each of the pair of ball members to urge the respective resilient wall portion into conformity with the opposite wall of the conduit and reverse depression effect at the central ball member, cooperating to choke off the flow. A removable metering member defining the hourglass configuration orifice and transverse air passage permits replacement of the most active, hence wear-exposed, portion of the system.

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## ERRATUM

For Class 51—249 see:
Patent No. 3,793,792

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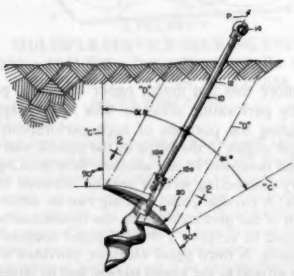
3,793,786

## SCREW ANCHOR

Earl M. Jahnke, Elmhurst, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Sept. 8, 1971, Ser. No. 178,712
Int. Cl. E02d *5/74*
U.S. Cl. 52—157 3 Claims



A screw anchor for penetration and holding in soft soil comprising an elongated shank rotatable about its longitudinal axis and having a lower end adapted to penetrate into the earth upon rotation. A helical flight is secured to the shank for holding engagement in the earth and includes a crowned upper surface extending outwardly of the shank and sloping downwardly adjacent the outer edge thereof, thereby increasing the holding strength of the flight by providing a larger, frustoconical, shear area in the soil rather than a smaller cylindrical shear area, as with conventional anchors.

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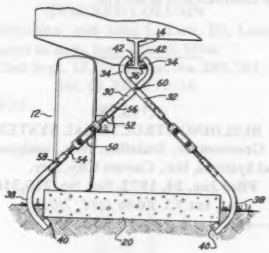
3,793,787

## TRAILER AND MOBILE HOME ANCHORING DEVICE

Clyde L. Shidaker, 1406 W. Sixth St., Mishawaka, Ind. 46544, and Joseph H. Manning, 57046 Mayflower Rd., South Bend, Ind. 46619

Filed Mar. 29, 1972, Ser. No. 239,230
Int. Cl. E02d *5/74*
U.S. Cl. 52—163 4 Claims



An anchoring device for trailers, mobile homes and similar vehicles in which an arm is provided with a securing means at opposite ends, the lower securing means consisting of a hooked portion for extending beneath the edge of the concrete slab or runner and the upper portion preferably being a hook member for attachment to a frame member on the vehicle, and a means for varying the length of the arm to secure the vehicle in place on the runner or slab. When the vehicle is to be secured to a runner, another embodiment may be used consisting of a pair of arms pivotally connected to one another, each having hooks at the upper and lower ends facing one another for gripping the runner and a member on the under side of the vehicle. Each arm contains an adjustable means such as a turnbuckle for varying the length of the arms, to secure the vehicle on the runner.

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3,793,788

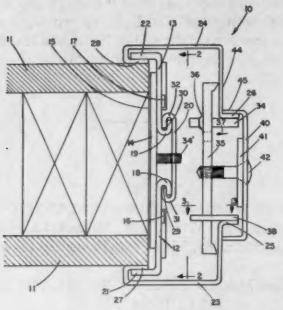
## ADJUSTABLE SPLIT DOOR FRAME

John H. Collins, 3651 Forest Manor, Indianapolis, Ind. 46218

Filed June 7, 1972, Ser. No. 260,444
Int. Cl. E06b *1/20*
U.S. Cl. 52—211 2 Claims

A frame for erecting around a door which is split to accommodate different wall thicknesses. A pair of opposed brackets are slidably mounted to a plate positioned adjacent the end of the wall. A pair of door jamb channels have outer ends sandwiched between the wall and the outer ends of the brackets.

The inner ends of the brackets are forced and locked together to secure the channels to the wall. The inner ends of the channels project into a rail which is secured to a member located between the channels and brackets.



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**3,793,789**

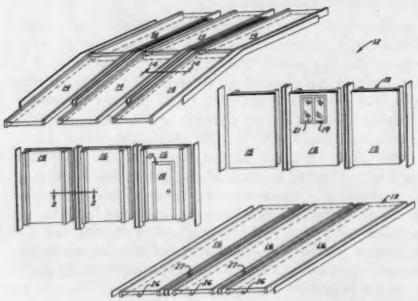
**BUILDING STRUCTURAL SYSTEM**

**Charles E. Greenamyer, Stateline, Nev., assignor to Building Structural Systems, Inc., Carson City, Nev.**

**Filed Jan. 24, 1972, Ser. No. 220,316**

**Int. Cl. E04b** *1/41, 7/02*

**U.S. Cl. 52—463** **12 Claims**



Structural units comprising laminated, skin-stressed, panels and attendant components are joined in various combinations by connecting members so as to form frameless, load-carrying structures affording a clear span desirable not only in commercial, industrial and institutional applications but in residential construction as well. The structural system especially lends itself to factory manufacture and assembly in maximum size transportable sections completely finished for jobsite installation on pre-arranged foundations.

The term panel is used herein in its broadest sense and denotes a structural member substantially greater in the dimensions of length and width than in thickness. The term structural unit is more comprehensive than the term panel and includes not only a panel but also various components associated with a panel.

**3,793,790**

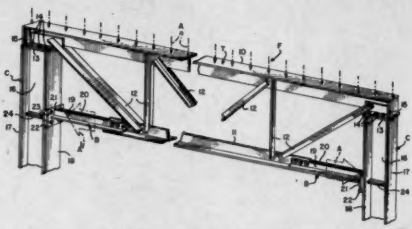
**FRAME CONSTRUCTION WITH YIELDABLE KNEE BRACE CONNECTION**

**Samuel L. Love, Overland Park, Kans., and Paul E. Swain, Grain Valley, Mo., assignors to Butler Manufacturing Company, Kansas City, Mo.**

**Filed May 2, 1972, Ser. No. 249,505**

**Int. Cl. E04c** *3/02*; **E04b** *1/36*

**U.S. Cl. 52—393** **10 Claims**



A frame construction with a yieldable knee brace connection comprising a beam truss means having a top chord and a bottom chord, the top chord of said beam truss means supported at least at one end thereof adjacent the top of a vertically extending column means, at least one knee brace means connected to and extending from one end of the bottom chord to the adjacent side of said vertically extending column means, and means operatively associated with said knee brace means to absorb horizontal deflection of said bottom chord and thus prevent bending of said vertically extending column means.

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**3,793,791**

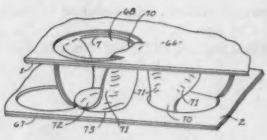
**METHOD AND APPARATUS FOR FORMING A PANEL FOR USE AS A STRUCTURAL ELEMENT**

**William A. Wootten, 425 Via Corta, Palos Verdes Estates, Calif. 92266**

**Filed Oct. 21, 1971, Ser. No. 191,528**

**Int. Cl. E04b** *2/28*; **E04c** *2/00*

**U.S. Cl. 52—615** **16 Claims**



Two or more thin flat metal, paper or plastic panels are combined by perforating areas or tabs in the plane of the panels, bending the portions of such perforations that are freed, at right angles to the plane of the panels, and attaching said extended members to one another, thus forming a link or intermediary-connecting web or section between the two or more panels. A parallel panel spacing can be achieved or by the variation of the perforated area, the panels can be proportionally spaced to achieve a desired panel contour or shape between panels. A third panel element, provided with larger tabs, can be affixed to the joined panels, and its larger tabs can be forced through the preexisting perforations in one panel to form additional struts engaging the opposite panel to increase the strength of the structure.

3,793,792

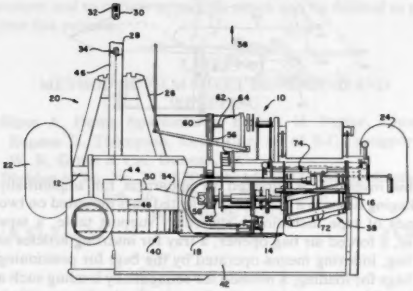
## POWER KNIFE GRINDER FOR A FORAGE HARVESTER CAPABLE OF GRINDING FIRST AND SECOND BEVELS ON THE KNIVES OF THE FORAGE HARVESTER CUTTERHEAD

**Robert A. Wagstaff, and Thomas W. Waldrop, both of New Holland, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.**

**Continuation-in-part of Ser. No. 183,392, Sept. 24, 1971. This application Jan. 4, 1972, Ser. No. 215,615**

**Int. Cl. B24b** *3/42, 1/00*

**U.S. Cl. 51—249** **30 Claims**



A powered knife grinder carried by a forage harvester and operable in one mode of operation to grind a first bevel on the forage harvester knives, and operable in a second mode of operation to grind a second bevel on each of the knives. The knife grinder includes a rotary abrasive member which is connected with the drive line to the forage harvester cutterhead when the knives are to be ground. During normal operation of the forage harvester when cutting crops the drive to the grinding means is disconnected. When grinding the first bevel on the forage harvester both the grinding means and the cutterhead are rotated, the grinding means being moved back and forth across the width of the cutterhead to grind the first bevel. During grinding of the second bevel, the drive to the cutterhead is disconnected, however, the drive to the grinding means is maintained and the grinding means is positioned along a radial inner surface of each knife to grind the second bevel. To facilitate the grinding of the second bevel, the cutterhead is spring biased against guide means carried by the grinding means to maintain each knife in its desired position with respect to the grinding means as the grinding means is moved back and forth across the width of the cutterhead during the grinding of the second bevel.

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3,793,793

## MULTIPLE SERVICE DECKING UNIT

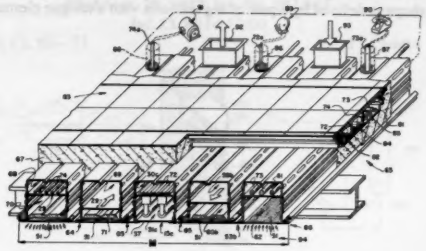
**Mark Dobbins, 1841 Titlon Drive, Pittsburgh, Pa. 15241**

**Filed Nov. 17, 1971, Ser. No. 199,656**

**Int. Cl. E04f** *17/08*

**U.S. Cl. 52—221** **3 Claims**

A decking unit presenting one or more main cells and incorporating partition means in at least one of the main cells which divides the same into separate upper and lower sub-cells. The decking units are assembled with an overlying layer of concrete to provide an integrated floor/ceiling structure wherein the sub-cells accommodate mechanical services, such as, acoustical control, electrical distribution, recessed ceiling lighting, ventilation and exhaust. The arrangement is such that the upper sub-cells provide selected mechanical services for the space above the floor/ceiling structure; and the lower sub-cells provide selected mechanical services for the space below the floor/ceiling structure. The sub-cells of the present integrated floor/ceiling accommodate the aforesaid mechanical



services within an acceptable modular distance, whereby an adequate repetition of each mechanical service is provided throughout the floor/ceiling structure.

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3,793,794

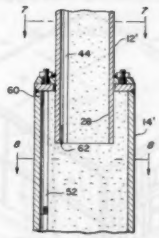
## STACKED COLUMN

**Bill Archer, Meridian, and John L. Low, III, Laurel, both of Miss., assignors to Arlo, Inc., Laurel, Miss.**

**Filed Sept. 15, 1972, Ser. No. 289,701**

**Int. Cl. E04h** *12/34*

**U.S. Cl. 52—632** **4 Claims**



A column comprised of a plurality of concrete-filled stacked tubes of increasingly smaller diameter, the tubes engaging each other in overlapping relationship and being secured by means of locking rings at the point of their engagement, prior to pumping the tube interiors with concrete. A modification of invention includes the positioning of longitudinally extending tension rods in the tubes on a tension and or compression side, so as to counteract anticipated load prior to pumping of concrete.

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3,793,795

## WATERPROOFING RECEIVER

**Charles A. Annand, P.O. Box 366, Truro, Nova Scotia, Canada**

**Filed June 14, 1972, Ser. No. 262,853**

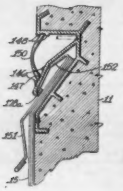
**Claims priority, application Canada, Sept. 23, 1971, 123534**

**Int. Cl. E04d** *3/36*

**U.S. Cl. 52—61** **4 Claims**

A receiver for use in fastening membranes of waterproofing material to a concrete wall structure so as to tightly secure the upper edge of the membranes and thereby prevent the upper edge from peeling away from the wall and sagging of the membranes. The receiver is in the form of an elongated member which is fastened to the inside of the concrete forms prior to pouring of the concrete, the receiver extending along the

length of the forms at grade level. The elongated member is concave in cross-section so as to form a hollow central portion which is exposed in the wall after the forms are removed, the receiver being contained within the poured wall. The concave shape is defined by a pair of leg sections with a tongue element



projecting from between the leg sections and biased towards the lower of the leg sections so that the upper edges of the waterproofing members or membranes are clamped between the tongue element and the lower leg section prior to adhering the membranes to the wall surface below the receiver.

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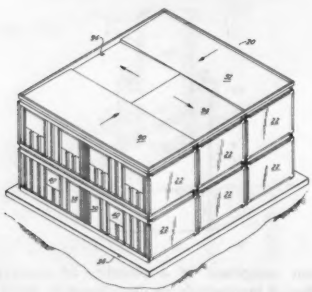
**3,793,796**

**MODULAR BUILDING SYSTEM**

**Robert Hughes, 26 Beaconsfield Blvd., Beaconsfield, Quebec, Canada**

**Filed Sept. 24, 1971, Ser. No. 183,343**
**Int. Cl. E04h** *9/06*
**U.S. Cl. 52—79** **12 Claims**



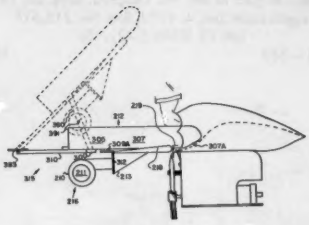
Modular building units are fabricatd from metal parts to form tubular sections having a rectangular cross section and variable length. The modular units are placed side by side and stacked to form a multi-story dwelling. The ends of the modules are closed with a rigid insulating material, and the sides, bottoms and tops are perforated where required for installation of doors, windows and staircases and to permit access from one module to another. The metal parts are trough shaped for increased strength, and the sides, bottoms and tops are interconnected by four channel members, which extend the entire length of the modules. The inside surfaces of the sides and tops are lined with gypsum board or some other suitable non-combustible material, and the inside surfaces of the bottoms are covered with particle board or the like. Gypsum board diaphragms are placed at suitable positions along the modules to define rooms or to divide the modules into a plurality of dwelling units. The modules are secured together and a roof section is placed above the stacked modules after which insulation and siding are placed around the exterior surfaces of the dwelling.

**3,793,797**

**METHOD OF PACKAGING ITEMS IN BAGS**

**John T. Roberts, Simpsonville, and Ralph L. Wing, Greenville, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.**

**Division of Ser. No. 47,926, May 7, 1970, Pat. No. 3,698,847. This application Aug. 10, 1972, Ser. No. 279,414**
**Int. Cl. B65b** *43/36*
**U.S. Cl. 53—29** **1 Claim**



This invention is directed to apparatus for sequentially packaging items in a chain of imbricated bags mounted on two strands of tape including a stationary support table, a tape puller, a forced air bag opener, a tray for inserting articles in the bag, indexing means operated by the bags for positioning the bags for loading; a method for sequentially loading such a chain of bags, supporting the bags in the loading position, opening the bags by directing air stream over and then into the bag, loading article via tray into bags; a special power supply apparatus for driving the tape puller including air motor, drive clutch and lock clutch; and a cartridge equipped chain of imbricated bags; all as further described hereafter.

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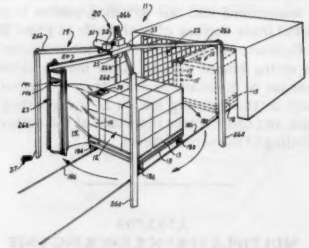
**3,793,798**

**SHRINK PALLETIZED PROCESS AND APPARATUS**

**Patrick R. Lancaster, III, and William G. Lancaster, both of Louisville, Ky., assignors to Lantech, Inc., Louisville, Ky.**

**Filed Oct. 6, 1972, Ser. No. 295,532**
**Int. Cl. B65b** *53/02*
**U.S. Cl. 53—30** **34 Claims**



This invention provides a process for making a high-strength unitary package, which has its generally vertically arranged portion overwrapped by a sheet of material of a type laminateable at its heat-shrinking temperature wherein an overlapped laminated seal is simultaneously formed between the leading and trailing edges of the sheet when the overwrapping sheet is also heat shrunk tightly against the package. Basically, the process comprises the steps of: placing a package on a support; locating a generally vertically arranged rolled-up sheet of a material of a type laminateable at its heat-shrinking temperature on dispenser means mounted for movement relative to the support; withdrawing a leading edge of the material from the dispenser and holding that leading edge

against the package; moving the dispenser means relative to the support about a generally vertical axis and thereby causing a sufficient amount of the material to be dispensed from the dispenser means to overwrap the generally vertically arranged portion of the package and also provide a section of the material overlapping the leading edge; severing the overlapping section from the dispenser means and holding it to the package in a position overlapping the leading edge; and heating the overwrapped package to the heat-shrinking temperature of the material and thus simultaneously forming an overlapping laminated seal between the leading edge and the overlapping section and also heat shrinking the overwrapped material tightly against the package. The present invention is also directed toward the product that is produced by this process and to certain apparatus which can be utilized to perform this process.

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**3,793,799**

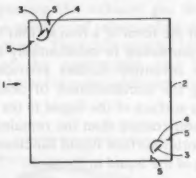
**METHOD OF FILM SHEET DISPENSING AND WRAPPING**

**Milton A. Howe, Spartanburg; Everett H. Dexter, Lyman; Eugene D. Thompson, Greenville, all of S.C., assignor to W. R. Grace & Co., Duncan, S.C.**

**Division of Ser. No. 225,820, Feb. 14, 1972. This application Feb. 26, 1973, Ser. No. 335,855**

**Int. Cl. B65b** *11/02*

**U.S. Cl. 53—32** **1 Claim**



This invention is a method and apparatus for dispensing film sheets which are used for wrapping hamburgers, sandwiches, or other products which must be hand wrapped quickly. The film sheets are stacked and stapled at at least one corner with cooperating slits cut in the film near the staple. The sheets can be easily and rapidly torn from the stack with the remaining film held firmly by the staple so that film fragments do not contaminate the product. A dispensing tray is provided which further secures the stack of film sheets. Products can be wrapped by placing them on the top sheet of film and lapping the corners over the product so the sheet is torn from the staple thereby wrapping the product as the sheets are dispensed.

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**3,793,800**

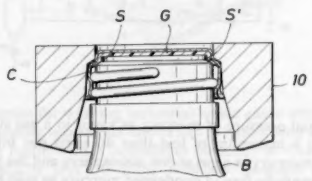
**CROWNING DIE**

**James P. Sexton, Beaumont, Tex., assignor to Peter J. Bevlaqua, Beaumont, Tex., a part interest**

**Filed Dec. 26, 1972, Ser. No. 317,953**

**Int. Cl. B67b** *3/12*

**U.S. Cl. 53—341** **3 Claims**



A crowning die for use in bottle crowning apparatus defines a number of concentric throat surfaces of successively smaller diameters for forming a resealable, twist-off crown on a bottle in a single axial movement onto the bottle.

**3,793,801**

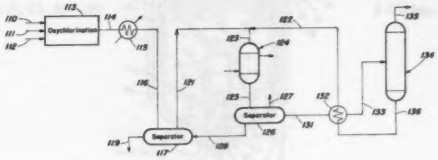
**RECOVERY OF CHLORINATED HYDROCARBON**

**Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.**

**Filed Sept. 28, 1972, Ser. No. 292,915**

**Int. Cl. B01d** *53/00*

**U.S. Cl. 55—71** **11 Claims**



A chlorinated hydrocarbon, such as dichloroethane, is recovered from an oxychlorination reaction effluent by cooling the effluent to condense chlorinated hydrocarbon and water, combining the remaining gas with hydrogen chloride in an amount to produce, in the subsequent cooling step, an aqueous hydrogen chloride condensate which does not freeze, and cooling the combined stream to condense remaining chlorinated hydrocarbon and aqueous hydrogen chloride.

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**3,793,802**

**GROUNDING SYSTEM FOR TUBULAR COLLECTORS IN ELECTROSTATIC PRECIPITATING APPARATUS**

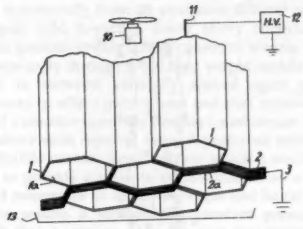
**Lothar Hardt, Eschborn, Germany, assignor to Metallgesellschaft A.G., Frankfurt am Main, Germany**

**Filed June 8, 1972, Ser. No. 260,813**

**Claims priority, application Germany, June 18, 1971, P 21 30 074.3**

**Int. Cl. B03c** *3/49*

**U.S. Cl. 55—155** **10 Claims**



Tubular electrodes, generally of a polygonal configuration, and composed of nonconducting synthetic resin material, whose surfaces are rendered conductive by the deposition of a conductive--liquid film in electrostatic precipitators of the tube type, are grounded or otherwise connected to a terminal of the electrostatic power supply by a bibulous textile strip along the lower edges of the electrode adapted to collect conductive liquid.

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**3,793,803**

**PISTON ACTUATED AUTOMATIC DRAIN FILTER**

**Jon E. Winter, Lakewood, Colo., assignor to Wilkerson Corporation, Englewood, Calif.**

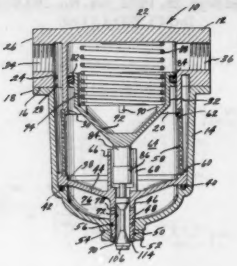
**Filed June 21, 1971, Ser. No. 155,111**

**Int. Cl. B01d** *33/38*

**U.S. Cl. 55—218** **3 Claims**

This invention relates to an air line filter of the type having a replaceable filter cartridge adapted to remove both entrained solids and fluids, the latter being dumped automatically by a

piston-actuated drain valve each time the air flow shuts off. More specifically, the instant invention relates to an improved version of such filter in which one or more bypass passages



break the seal between the valve element and its seat so that the O-ring forming the seal is not drawn from its groove into a position where it will be damaged upon a downstream demand that returns the valve to closed position prematurely.

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**3,793,804**

## COLLECTOR ELECTRODE FOR ELECTROSTATIC PRECIPITATOR

**Walter Steuernagel, Frankfurt/Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany**

**Continuation-in-part of Ser. No. 154,086, June 17, 1971. This application Apr. 17, 1972, Ser. No. 244,659**

**Claims priority, application Germany, Apr. 20, 1971, G 71 14 982.1**

**Int. Cl. B03c** *3/45*

**U.S. Cl. 55—112** **8 Claims**

A collector electrode for an electrostatic precipitator in the form of a sheet-metal strip reinforced by a channel structure in which the corrugations are in the form of flat trapezoid sections with open broad bases turned in opposite direction and running along the length of the strip. The strips have overlapping flanges where they adjoin and comprise at least three such trapezoidal sections.

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**3,793,805**

## METHOD AND APPARATUS FOR REMOVING AIR FROM A LIQUID

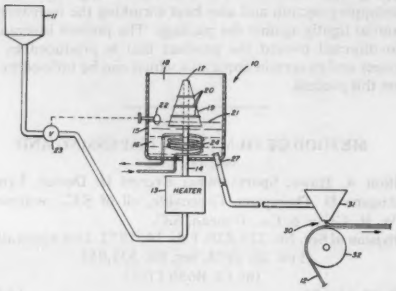
**Edward P. Hoffman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Dec. 13, 1971, Ser. No. 207,053**

**Int. Cl. B01d**

**U.S. Cl. 55—49** **10 Claims**

A method and apparatus for removing air from a liquid. The invention provides a heater for heating the liquid so as to reduce the ability of the liquid to retain air, a tank for storing an accumulation of the liquid which has been deaerated, and a means for delivery of the heated liquid into the tank. The delivery means comprises a vertical pipe exposing the hot liquid to an ambiance so that a substantial number of discrete bubbles in the heated liquid will accelerate toward and burst upon contact with the ambiance. The delivery means further includes a generally conically shaped member for cascading




the heated liquid in the form of a film so that the film of liquid is exposed to the ambiance to substantially rid the liquid of dissolved air. The invention further provides, in the tank, means for cooling the accumulation of deaerated liquid in such a way that the surface of the liquid in the tank is at a substantially higher temperature than the remainder of the liquid in the tank. The hotter surface liquid functions as a barrier to prevent reaerating of the liquid in the tank.

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**3,793,806**

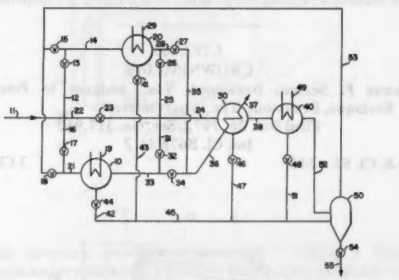
## LOW TEMPERATURE REMOVAL OF MERCURY FROM GAS STREAMS

**Louis Leonard Fornoff, Cedar Grove, N.J., assignor to Union Carbide Corporation, New York, N.Y.**

**Filed Sept. 25, 1972, Ser. No. 292,144**

**Int. Cl. B01d** *5/00*

**U.S. Cl. 55—72** **1 Claim**



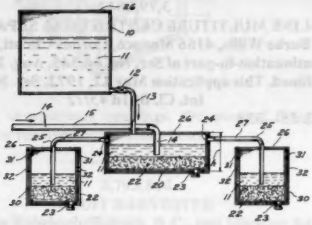
The partial pressure of mercury as vapor in a gas stream is lowered to a maximum of less than 40 parts per billion by volume of mercury in a gas at one atmosphere and the product gas is substantially free of condensed mercury as mist by cooling a mercury-containing flowing gas stream to 0°F or below, providing that the gas stream also contains water vapor at a minimum partial pressure of $6 \times 10^{-3}$ atmosphere and the cooling is effected by indirect cooling means wherein condensed water is collected as crystalline ice.

3,793,807

## AUTOMOTIVE ENGINE EXHAUST PURIFIER

Gregory Prem Das, Los Angeles, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 27, 1972, Ser. No. 266,532
Int. Cl. B01d 47/00
U.S. Cl. 55—93 1 Claim



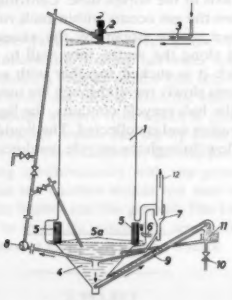
A process of purifying the exhaust emissions of an automotive engine, by passing the exhaust gas through a series of tanks containing a mixture of saline solution and a solution of Tri-Sodium Phosphate. The tanks may be located adjacent the engine section of the automobile and behind the front headlight and fender section for optimum cooling.

3,793,808

## PROCESS FOR THE PURIFICATION OF GASES

Paul Ackermann, Moers, Germany, assignor to Polycarbona Chemie GmbH, Hamburg, Germany

Filed Dec. 13, 1971, Ser. No. 207,443
Int. Cl. B01d 47/06
U.S. Cl. 55—89 1 Claim



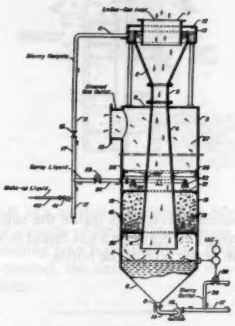
A process for washing industrial waste gases which contain foam-forming substances comprises (1) atomizing an aqueous washing liquid with a centrifugal atomizer of Canadian Pat. No. 846,076 into 50–150μ diameter droplets for slowly descending in a tower containing the gas to be washed at a rate requiring greater than two seconds, (2) slowing the vertical descent of the gas relative to the liquid droplets for allowing the droplets to drop into a sump in the bottom of the tower, and (3) recirculating the aqueous washing liquid from the sump up to the atomizer in the top of the tower.

3,793,809

## VENTRI-SPHERE HIGH ENERGY SCRUBBER

James P. Tomany, Darten, and George H. Cash, Wilton, both of Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 824,365, May 5, 1969, which is a continuation of Ser. No. 625,260, March 22, 1967, abandoned.
This application Dec. 21, 1972, Ser. No. 317,346
Int. Cl. B01d 47/02
U.S. Cl. 55—91 5 Claims



An improved multiple stage and compact form of venturi type scrubber unit adapted for cleaning gaseous streams laden with extremely fine particulates, with such unit providing a downflow of the gaseous stream through a venturi throat section along with recycle slurry to effect high velocity wetting of entrained particles. The discharge of wetted gas and particles is, in turn, downwardly from an elongated diffuser section or energy regain tube toward a lower slurry collecting zone whereby the gaseous stream flow is caused to reverse 180° and then pass upwardly through loose light weight mobile packing maintained in between vertically spaced apart perforate retainer means to effect particulates and mist removal in the presence of a counter-currently flowing liquid stream being introduced above such removal zone. A preferred embodiment utilizes a flexible venturi throat section which is mechanically adjustable to provide a variable cross-sectional area that will be changed responsive to variations in gas and liquid volumes and in turn sustain a substantially constant pressure drop across such throat section. Also, the unit may incorporate a plurality of sloping vane means above the mobile packing zone to effect further liquid de-entrainment from the clean gas stream prior to its discharge from the unit.

3,793,810

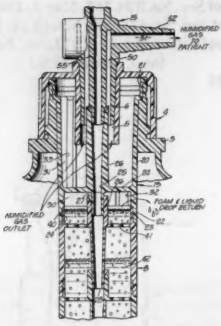
## DEFOAMING DEVICE FOR MEDICAL HUMIDIFIER

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed June 19, 1972, Ser. No. 264,350
Int. Cl. B01d 45/04; A61m 15/00
U.S. Cl. 55—255 17 Claims

A device for defoaming and separating liquid drops from a humidified gas supplied to a patient for breathing during inhalation therapy. The defoamer has a dual chambered partitioned housing with a separate window opening into each chamber. One chamber picks up foam and liquid drops and recycles them to a liquid reservoir in a supply bottle. The

other chamber collects the defoamed humidified gas that is free of liquid drops and supplies it to a patient's breathing



tube. The defoaming device fits inside the supply bottle and forms a connecting link between a gas-liquid mixing column in the bottle and an outlet port of the bottle.

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3,793,811

## FILTERS FOR SEPARATING DUST FROM AIR

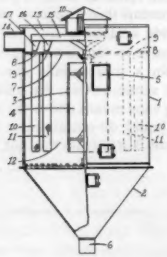
Ronald Frederick Bourne, Morningside, Transvaal, South Africa, assignor to The Asbestos Grading Equipment Company (South Africa) (Proprietary) Limited, Johannesburg, Transvaal, South Africa

Filed Apr. 28, 1972, Ser. No. 248,433

Claims priority, application South Africa, May 3, 1971, 2874

Int. Cl. B01d *46/04*

U.S. Cl. 55—294 4 Claims



This invention relates to industrial filters for separating solid particles entrained in a gas, particularly dust in air. The invention resides in the provision of a filter chamber in an outer annular region of a casing and a contaminated air inlet on a central region surrounded by the filter chamber, which is directly converse to normal arrangement for filters of this type. Circular rows of filter bags are located in the outer annular region and a rotary air jet is provided for creating sequential back pressure in the bags of the rows. By locating the filter chamber in the outer region of the casing a greater space is available for filter bags in a casing of given size than where the filter chamber is centrally located and improved efficiency of the filter is obtained.

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3,793,812

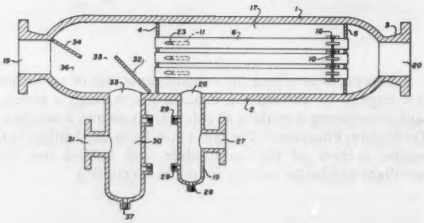
## IN-LINE MULTITUBE CENTRIFUGAL SEPARATOR

Robin Burke Willis, 4166 Monaco, Corpus Christi, Tex. 78411

Continuation-in-part of Ser. No. 66,545, Aug. 24, 1970, abandoned. This application May 12, 1972, Ser. No. 252,900

Int. Cl. B01d *45/12*

U.S. Cl. 55—338 1 Claim



An in-line separator for removing entrained liquid from a pipeline gas flow is provided. The separator has a plurality of vortex tubes mounted within a common shell. Each vortex tube is formed with a single circumferential recycle gap at its outlet end. A hub, carrying vanes, is mounted in the inlet of each vortex tube. Each hub defines a recycling conduit connecting the outer chamber, defined between the shell and the vortex tubes, with the low pressure zone which exists along the longitudinal axis of the vortex tube. Centrifugal separation of the liquid from the gas occurs within each vortex tube, due to the twist given to the stream by the vanes. The separated liquid moves along the vortex tube wall to the recycle gap, through which it is sucked together with some gas. As the recycled steams slowly travel through the outer chamber from the gaps to the hub recycle conduits, the liquid drops out by gravity separation and is collected. The liquid-free gas returns to the main flow through the recycle conduits.

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3,793,813

## PLEATED FILTER ASSEMBLY

Robert L. McAllister, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

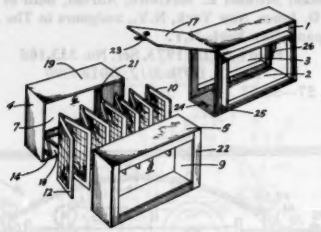
Filed May 19, 1972, Ser. No. 254,873

Int. Cl. B01d *27/06*

U.S. Cl. 55—481 3 Claims

A filter assembly comprising an outer housing having upstream and downstream openings to permit fluid flow therethrough, an inner housing having an upstream and downstream opening therein to permit fluid flow therethrough, the inner housing being adapted for being

received by the outer housing, and a pleated filter medium disposed transverse the direction of fluid flow between the up-



stream and downstream openings, the pleated filter being adapted to be received by the inner housing.

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**3,793,814**

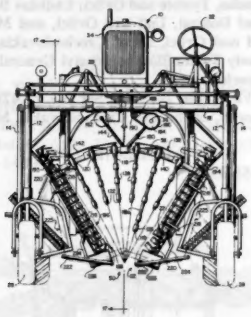
**FRUIT HARVESTER**

**Roger Phillip Rohrbach, Raleigh, N.C., and Miroslav Rajnoch, Prague, Czechoslovakia, assignors to Research Corporation, New York, N.Y.**

**Filed Oct. 21, 1971, Ser. No. 191,194**

**Int. Cl. A01g** *19/00*

**U.S. Cl. 56—1** **6 Claims**



A high clearance tractor moves over a row of fruit bushes and carries an underslung floating harvester unit which has longitudinally extending flapper means that sets up vibrations in higher order vibrational modes over the entire profiles of the bushes to dislodge mature fruit which is caught about at ground level by catcher means carried by endless conveyors arranged vertically on the outsides of the flapper means, such conveyors running synchronously with the ground speed of the tractor so that the catcher means has zero velocity with respect to both the bushes and the ground. The catcher means conveys the fruit to fruit lugs removably arranged vertically in a cascade arrangement at the sides of the tractor.

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**3,793,815**

**TREE SHAKER**

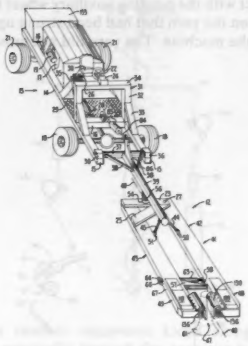
**Guy O. Hughes, Marysville, Calif., assignor to John C. Woudstra Mid State Mfg. Co., Manteca, Calif.**

**Filed Jan. 29, 1973, Ser. No. 327,592**

**Int. Cl. A01g** *19/00*

**U.S. Cl. 56—328 TS** **12 Claims**

Suspended from a forwardly projecting boom is a pair of fore and aft elongated tree gripping arms pivotally connected at their after ends. The forward ends of the tree gripping arms are movable between an open position and a closed position wherein the trunk of the tree is clamped. Dissimilar weights in each of the forward tree clamping ends of the arms are rotated at different velocities to produce random, non-repetitive, vibrational frequencies and amplitudes effective to dislodge the crop from the tree being shaken. A three point suspension allows the tree gripping arms to roll, within limits, about a cen-



tral fore and aft axis so that the clamping jaws automatically conform to the attitude of the tree trunk being gripped. Elevation of the clamping jaws is controlled by lifting and lowering the boom. If desired, the shaker can be mounted on a self-propelled vehicle.

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**3,793,816**

**CONTINUOUS YARN TREATING METHOD**

**Mikio Kodama, Fujimagari, Japan, assignor to Fuji Spinning Co., Ltd., Tokyo, Japan**

**Filed Feb. 29, 1972, Ser. No. 230,436**

**Int. Cl. D06c** *1/00;* **B65h** *51/00*

**U.S. Cl. 57—164** **10 Claims**

An advancing sheet-like yarn group consisting of a number of parallel yarns is spirally wound by a holding yarn stronger than the parallel yarn and is subjected to treatment. The holding yarn is undone from the treated and advancing sheet-like yarn group while being wound up to a bobbin rotating about its axis and moving around the sheet-like yarn group.

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**3,793,817**

**AUXILIARY YARN START-UP WHEEL AND METHOD FOR DRAW FALSE TWIST MACHINES**

**Charles William Beringer, and Marion Archer Wilder, Jr., both of Columbia, S.C., assignors to Allied Chemical Corporation, Morristown, N.J.**

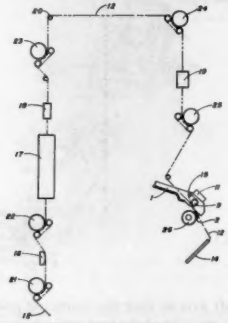
**Filed June 12, 1972, Ser. No. 261,838**

**Int. Cl. D02g** *1/02*

**U.S. Cl. 57—34 HS** **7 Claims**

This invention relates to an auxiliary yarn start-up wheel and method. The previously known auxiliary wheel consisted of a rotatable disc driven by the winder drive roll on the draw

false twist machine, this disc in turn, by means of gears and a magnetic clutch, drives the auxiliary start-up wheel. The improvement is providing a weight to get better friction drive, providing a ceramic guide with multiple grooves, and providing at least a 4 pole magnet as part of the magnetic clutch. In the prior art method, the yarn passed over a simple wire guide and had contact with the rotating auxiliary wheel to slightly increase tension on the yarn that had been strung up through the threadpath of the machine. The yarn did not move. In the improved method, the yarn still does not move, but tension on the yarn can be increased at least two-fold by wrapping the yarn at least two and one-half times about the start-up wheel and the modified ceramic guide so the start-up wheel stops rotating but the magnetic clutch slips, applying torque to the wheel. By means of this method and improved start-up wheel, yarn begins to move as soon as the drive roll prior to false twist spindle is engaged. The prior art wheel and method did not move the yarn until the drive rolls both prior to and immediately after the false twist spindle were engaged.



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**3,793,818**

**DOFFING AND DONNING APPARATUS USABLE FOR TEXTILE MACHINES SUCH AS DRAW-TWISTERS**

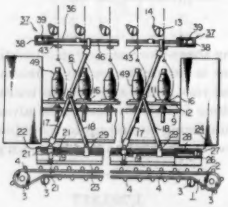
**Yakichi Yamamoto, Kanazawa, Japan, assignor to Ishikawa Seisakusho Ltd., Ishikawa, Japan**

**Filed Mar. 10, 1972, Ser. No. 233,481**

**Claims priority, application Japan, Dec. 2, 1971, 46/98186**

**Int. Cl. D01h** *9/00*

**U.S. Cl. 57—52** **5 Claims**



Apparatus for doffing full cops mounted on spindles of a textile machine such as draw-twisters for synthetic fibers onto an intermittently circulatable conveyer mechanism of the zigzag pegs arrangement type and for donning of bare bobbins mounted on the conveyer mechanism onto the spindles by carrying them by pneumatically actuated resilient gripper assemblies which are moved along the prescribed routes by combination of vertical pantagraph motion of a lifting mechanism with horizontal pantagraph motion of a horizontal displacer mechanism.

**3,793,819**

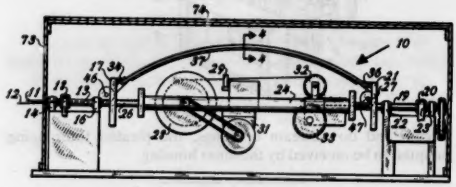
**QUIET STRANDER**

**David D. Madalozzo, Tarboro, N.C.; Charles E. Koons, Freeman; Michael E. McGuire, Adrian, both of Mo., and Earl D. Jones, New York, N.Y., assignors to The Anaconda Company, New York, N.Y.**

**Filed Feb. 16, 1973, Ser. No. 333,105**

**Int. Cl. D07b** *3/12*; **D01h** *7/90*

**U.S. Cl. 57—58.52** **8 Claims**



For relatively quiet operation a strander is provided with a streamlined bow formed by joining two reinforced plastic members having elongated cross sections and being grooved to allow a passageway between them for the strand.

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**3,793,820**

**DEVICE FOR RINGLESS SPINNING OF FIBERS**

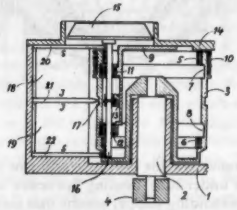
**Jaroslav Rajnoha, Tyniste nad Orlici; Ladislav Bures, Usti nad Orlici; Josef Dolezal, Usti nad Orlici, and Miroslav Jungmann, Usti nad Orlici, all of Czechoslovakia, assignors to Elitex Zavody Textilnilio Shojuenstvi Generalin Reditelslvi, Liberec, Czechoslovakia**

**Filed Mar. 20, 1970, Ser. No. 21,428**

**Claims priority, application Czechoslovakia, Mar. 20, 1969, 1980-69**

**Int. Cl. D01h** *1/12*

**U.S. Cl. 57—58.89** **24 Claims**



A hollow rotary spinning chamber has a shaft fixed therewith and defining an axis of rotation for the chamber. Drive means engages the shaft for rotating it and thereby the spinning chamber. Magnetic means maintains the shaft in a predetermined operative position in lieu of bearings.

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**3,793,821**

**METHOD OF AND APPARATUS FOR REGULATING THE SPEED OF RING OR SPINDLE RAILS ASSOCIATED WITH TEXTILE MACHINES**

**Augustin Schafer, Ebersbach, Germany, assignor to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung, Postfach, Ebersbach, Germany**

**Filed Sept. 8, 1971, Ser. No. 178,613**

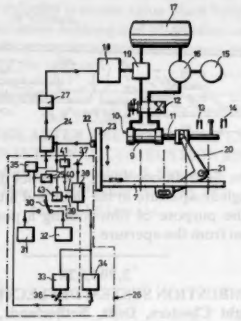
**Claims priority, application Germany, Sept. 8, 1970, P 20 44 358.7**

**Int. Cl. D01h** *1/24*, *1/36*

**U.S. Cl. 57—95** **11 Claims**

In textile machines, for obtaining a more uniform wound package on a bobbin supported by a spindle, the motion of the

reciprocating ring rail is controlled in such a manner that the level of the desired speed designed for the rail travel after



reversal of direction, is temporarily increased for the duration of the deceleration and acceleration phases in and about the upper and lower reversal points of the ring rail travel.

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3,793,822

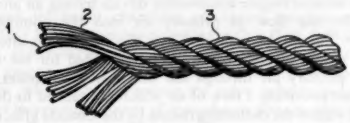
**FISHING NET**

Shoji Kawai, Tokyo, Japan, assignor to Momoi Fishing Net Manufacturing Co., Ltd., Hyogo-ken, Japan

Filed July 14, 1971, Ser. No. 162,441

Int. Cl. A01k *71/00*, *73/00*; D02g *3/04*

U.S. Cl. 57—140 BY 10 Claims



A fishing net formed of monofilaments 200 to 2,000 deniers thick which are prepared mainly from polyamide resin blended with polypropylene and, if desired, at least one selected from the group consisting of polyester resin, polyvinyl chloride and polyvinylidene chloride.

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3,793,823

**METHOD OF MAKING COMPLIANT SUSPENSION CABLE**

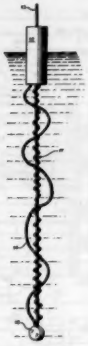
Charles V. Tallman, Rye Beach, N.H., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 37,074, May 14, 1970, Pat. No. 3,696,325. This application July 26, 1972, Ser. No. 275,128

Int. Cl. D02j *1/06*

U.S. Cl. 57—163 4 Claims

Compliant, nonstrumming, high strength composite cable and method of making thereof for a sonobuoy suspension system. Nonabsorbent relatively inelastic strands of textile yarn are bound onto an elastomeric warp strand by two counter wound helixes of textile stretch yarn. The inelastic



yarn forms random transverse loops along the cable by protruding outwardly through the openings between the helical windings.

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3,793,824

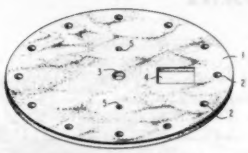
**METHOD FOR MANUFACTURING DIALS FOR WATCHES AND DIALS FOR WATCHES MANUFACTURED ACCORDING TO SAID METHOD**

Andre Simon-Vermot, and Eric M. Hofer, both of Le Locle, Switzerland, assignors to Les Fabriques d'Assortiments Reunies, Neuchatel, Switzerland

Filed Aug. 23, 1972, Ser. No. 282,940

Int. Cl. G04b *39/00*; C03b *29/00*

U.S. Cl. 58—91 8 Claims



A glass watch dial is formed from a moldable glass batch comprising a mixture of glass-forming oxides, intermediate oxides, network-modifying oxides, and a devitrifying agent such as a metal oxide or a metal in colloidal dispersion, which is melted, and to which then is added a metal oxide capable of forming colored crystal nuclei of a synthetic mineral in the presence of the devitrifying agent, then the mass is cooled, the batch is molded to a dial and held at elevated temperature above its annealing point to permit the growth of crystallites from various minerals into the glass matrix to form a mineral similar in aspect, chemical composition and crystal structure to a semiprecious stone.

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3,793,825

**TIME DELAY GAS TURBINE STARTING SYSTEM WITH FUEL PRESSURE AND FLAME SENSING CIRCUITRY**

Irwin C. Dickhart, Westland, and James E. Fenton, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

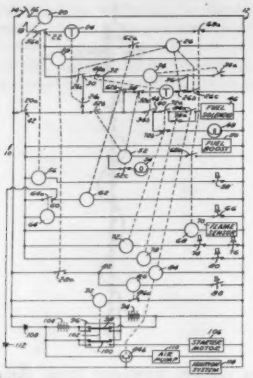
Filed Jan. 27, 1972, Ser. No. 221,325

Int. Cl. F02c *7/26*

U.S. Cl. 60—39.14 R 8 Claims

A fuel pressure sensing switch prevents actuation of a starter motor until after fuel pressure at the nozzle reaches a

predetermined level. This arrangement prevents air flow from reaching a velocity at which ignition is difficult before adequate fuel is present. The electrical system also includes a



control battery and a supplemental battery that are connected in parallel for normal system operation and recharging and are connected in series across the starter motor during starter motor operation.

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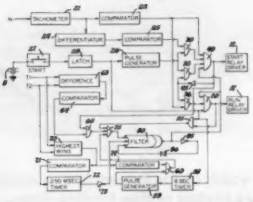
**3,793,826**

## ELECTRONIC START CONTROL CIRCUIT FOR GAS TURBINE ENGINE

**Bruce W. Holleboom, and Douglas W. Sweet, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Dec. 8, 1972, Ser. No. 313,552**
**Int. Cl. F02c** *7/26*
**U.S. Cl. 60—39.14 R** **2 Claims**



An automatic start control circuit for a gas turbine engine which, upon activation of a start signal, engages a starter motor to accelerate the engine to a speed at which the engine will fire. Thermocouples, a speed sensor and various analog and logical elements combine to automatically disengage the starter when idle speed is reached, if acceleration falls below a critical value, if combustion temperature exceeds a critical value, if no "light-off" occurs or if a thermocouple fails.

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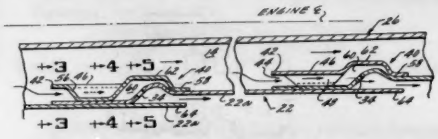
**3,793,827**

## STIFFENER FOR COMBUSTOR LINER

**Edward E. Ekstedt, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio**

**Filed Nov. 2, 1972, Ser. No. 303,197**
**Int. Cl. F02c** *3/00*
**U.S. Cl. 60—39.65** **12 Claims**

A combustor liner in a gas turbine engine is provided with a stiffener for disposition within a cooling fluid plenum circumscribing the liner. The stiffener engages and adds radial and circumferential stiffness to the liner. The stiffener includes a fluid inlet opening into the plenum for admitting a portion of the cooling fluid from the plenum, a reduced flow area portion wherein the fluid is accelerated and brought into heat exchanging engagement with the liner, and an outlet for exhausting the fluid. In one form, the outlet directs the cooling fluid through an aperture in the liner and into the combustion zone for the purpose of film-cooling a portion of the liner downstream from the aperture.



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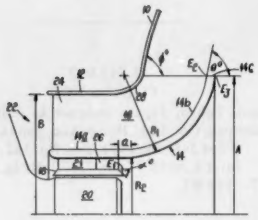
**3,793,828**

## COMBUSTION SYSTEM DEFLECTOR PLATE

**Allan Knight Chesters, Delft, Netherlands, assignor to The Secretary of State of Defence, London, England**

**Filed Sept. 27, 1971, Ser. No. 184,012**
**Claims priority, application Great Britain, Sept. 26, 1970, 45,977/70**
**Int. Cl. F02c** *7/22*
**U.S. Cl. 60—39.66** **5 Claims**



A gas turbine engine combustion device having an annular intake for the flow of primary air into the combustion chamber. The intake is divided by deflecting means into two annular ducts. One main duct being provided for the main flow of primary air through the combustion chamber, the other duct providing a flow of air which is attached to the innermost wall of the deflecting means by the Coanda effect.

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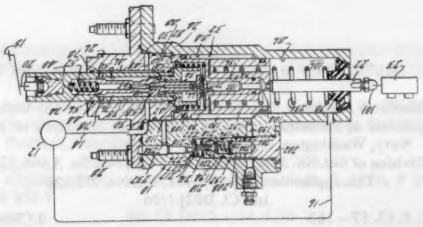
**3,793,829**

## HYDRAULIC BOOSTER WITH PEDAL TRAVEL CONTROL

**Kenneth B. Swanson, Bannister, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio**

**Filed Oct. 2, 1972, Ser. No. 293,920**
**Int. Cl. F15b** *7/00;* **F01b** *7/00, 7/10*
**U.S. Cl. 60—547** **11 Claims**



A hydraulically operated booster brake mechanism which operates in response to movement of the brake pedal to

produce braking when hydraulic pressure or power is available to assist such braking and also in the absence of such pressure and in which the ratio of pedal travel required at the foot pedal to afford displacement of the piston in the brake producing master cylinder is at one value when hydraulic pressure is available to assist braking and at another value in the absence of hydraulic pressure when braking must be produced by physical effort of the operator.

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**3,793,830**

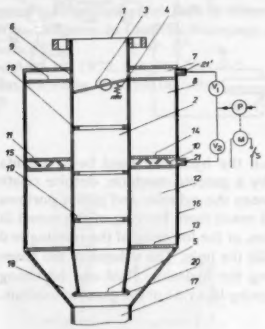
**DEVICE FOR THE AFTER TREATMENT OF EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE**

**Paul August, Capellades 1, Barcelona 6, Spain**

**Filed May 19, 1972, Ser. No. 255,182**

**Int. Cl. F01n** *3/14*

**U.S. Cl. 60—288** **11 Claims**



A device for the treatment of exhaust gases leaving an internal combustion engine in which a main flow passage for the gases is surrounded by another passage having therein axially arranged treatment chambers containing catalyst material. The main flow passage is provided with a flow control valve which, at low engine speeds, diverts substantially all of the exhaust gases to the outer passage surrounding the main flow passage, while at higher speeds the valve deflects and permits an ever increasing amount of the exhaust gases to pass through the main flow passage. The main flow passage and the outlet end of the outer passage containing the catalyst chambers are coaxially arranged and taper inwardly so that there is a mingling of the gases from the passages at the discharge end of the device. The device is adapted for direct connection to the exhaust manifold of an engine and can be incorporated directly therein.

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**3,793,831**

**ELECTROLIC CONTROL VALVE**

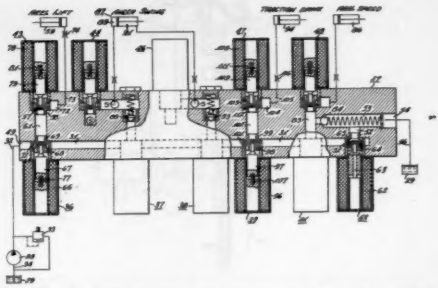
**Ramkishan Khatti, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Filed June 8, 1972, Ser. No. 260,741**

**Int. Cl. F15b** *21/08*

**U.S. Cl. 60—471** **6 Claims**

A control valve consisting of two-way normally closed solenoid operated poppet valves and two-way normally open solenoid operated poppet valves. The normally closed solenoid operated valves are arranged to direct flow to and from a cylinder in the desired manner. For the control of each single acting cylinder, two normally closed solenoid operated valves are required, whereas, for a double acting cylinder, four normally closed solenoid operated and two check valves are needed. These sets of solenoid operated valves are incorporated in a single body or manifold to control the different functions on a combine such as reel height, reel speed, auger swing and tracton drive. The control valve also includes low flow circuit relief valve set at 2,000 psi and a 300 psi relief valve to satisfy maximum pressure conditions for reel speed



operation. The valve is located near to a supply pump and the pump flow passes through the normally open two-way solenoid operated valve and back to sump to minimize pressure drop in neutral.

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**3,793,832**

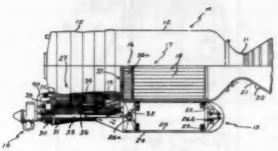
**NUCLEAR ENGINE REACTOR ROCKET CORES**

**Calvin W. Moon, Greenhills, Ohio, assignor to The United States of America as represented by the Secretary of the Air force, Washington, D.C.**

**Filed July 23, 1968, Ser. No. 747,784**

**Int. Cl. G21d**

**U.S. Cl. 60—203** **4 Claims**



A nuclear rocket engine reactor core equipped with a series of coolant channels having hydraulic diameters that decrease in programmed proportion with increasing radial position from the core center to thereby reduce the required propellant coolant flow to a minimum during the aftercooling period occurring after reactor shutdown.

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**3,793,833**

**DEVICE FOR REDUCING HARMFUL CONSTITUENTS OF THE WASTE GASES IN INTERNAL COMBUSTION ENGINES OF AUTOMOBILES**

**Richard van Basshuysen, Kirschenweg, Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Germany**

**Filed Nov. 12, 1971, Ser. No. 198,110**

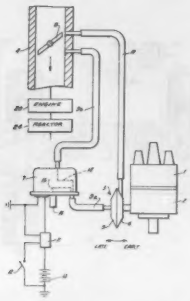
**Claims priority, application Germany, Dec. 17, 1970, 2062220**

**Int. Cl. F02b** *75/10*

**U.S. Cl. 60—284** **3 Claims**

This invention relates to a device for reducing harmful waste gas components of automobile internal combustion engines by external ignition. A waste gas reactor is fitted on the

engine exhaust pipe, in which the unburnt waste gas components are burnt, with the addition of air, if necessary, and which is equipped with combustion time control that can be



adjusted for a predetermined time on starting in the direction of retarded ignition by the diminished pressure in the suction duct.

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**3,793,834**

## DEVICE DRIVING A HEAVY BODY IN RECIPROCATING MOTION

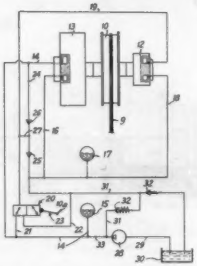
**Louis E. Martin, Senlis, France, assignor to Societe Anonyme Poclain, (Oise), France**

**Filed Dec. 16, 1971, Ser. No. 208,666**

**Claims priority, application France, Dec. 22, 1970, 7046239; Nov. 23, 1971, 7141878**

**Int. Cl. F15b** *1/02*

**U.S. Cl. 60—413** **15 Claims**



The present invention relates to a device for driving a heavy body connected to a drive motor by a cable, whilst the forces transmitted to said body by the motor are alternately higher than and opposite the forces of gravity acting on this body, and lower than said forces of gravity, and a device antagonistic to said forces of gravity is permanently coupled to the drive motor. Said antagonistic device is constituted by a spring motor.

The invention is applicable to the production of an installation for pumping petroleum oil products.

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**3,793,835**

## VARIABLE RATE HYDRAULIC-PNEUMATIC WEIGHT CONTROL AND COMPENSATING APPARATUS

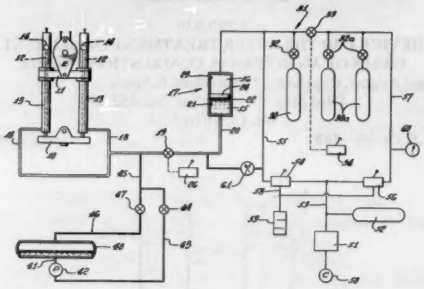
**Edward Larralde, Santa Barbara, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.**

**Filed Feb. 2, 1972, Ser. No. 222,919**

**Int. Cl. F15b** *1/02*

**U.S. Cl. 60—413** **19 Claims**

Apparatus automatically compensating for relative vertical movement between a hoisting or supporting mechanism and a load carried thereby, which load, for example, may be a running string connected to a drill bit used in drilling a subaqueous well bore, the mechanism supporting the running string being mounted on a floating vessel positioned over the well bore. The compensating apparatus includes a cylinder and piston device containing a hydraulic fluid exerting a lifting or tensioning force on the running string, or other load, the



pressure on the hydraulic fluid being maintained generally constant by a gaseous medium, despite relative axial movement between the cylinder and piston portions of the device, that might result from heaving of the vessel due to wind and wave action, or the lowering of the running or drilling string as the bit drills the hole. The volume of the gaseous medium for pressurizing the hydraulic fluid can be changed in order to vary the spring-like rate of the gaseous medium.

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**3,793,836**

## THERMODYNAMIC RECIPROCATING MACHINE COMPRISING A COMPRESSOR

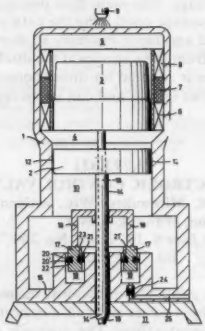
**Jacobus Hubertus Abrahams, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.**

**Filed Apr. 21, 1972, Ser. No. 246,141**

**Claims priority, application Netherlands, May 4, 1971, 7106039**

**Int. Cl. F03g** *7/06*; **F25b** *9/00*

**U.S. Cl. 60—521** **5 Claims**



A thermodynamic reciprocating machine having an integral compressor in which at least one compression element is present within the buffer space and is connected to the piston-like member which bounds the buffer space or to the associated piston rod, which element can vary the volume of a compression space, at least one piston ring being present as an

inlet valve between the cooperating wall parts of the compression element and the compression space, said ring being incorporated in a groove in the wall of the compression element or of the compression space, an open communication being always present between the compression space and the space in the groove behind the piston ring, the outlet valve which communicates with the compression space being accomodated in the wall of the compression space, the outlet being passed to the outside through a wall of the buffer space.

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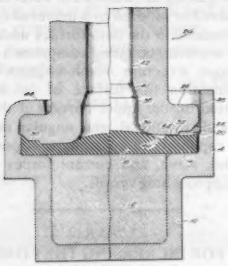
3,793,837

## WAX ELEMENT DIAPHRAGM AND SEAL

William A. Biermann, Brookfield, and John S. Rice, Milwaukee, both of Wis., assignors to Controls Company of America, Schiller Park, Ill.

Filed Aug. 10, 1972, Ser. No. 279,467
Int. Cl. F03g 7/00; H01h 71/16
U.S. Cl. 60—527 7 Claims



The flanged end of the plunger guide which fits into the enlarged end of the wax element cup has a chamfer which seats against the internal shoulder when the clamping is completed. Inside the chamfer is a flat leading to a downwardly radiused clamp portion which develops maximum compression of the elastomeric diaphragm. The radius and the chamfer both force the elastomer to flow outwardly to effect a superior seal. The diaphragm face remote from the wax charge has a generally annular recess (which appears to dis-appear after clamping) to reduce the friction between the diaphragm and the guide to thereby facilitate stretching the diaphragm over a maximum area.

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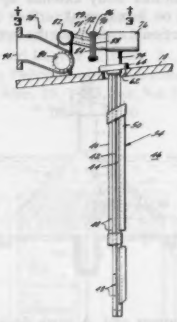
3,793,838

## AUGMENTER FUEL INJECTION MOUNTING SYSTEM

Dudley O. Nash, Forest Park, Ohio, assignor to General Electrical Company, Cincinnati, Ohio

Filed Sept. 5, 1972, Ser. No. 286,434
Int. Cl. F02c 3/04, 7/22
U.S. Cl. 60—261 15 Claims

An augmenter fuel distribution system for a gas turbine engine includes a fuel manifold assembly mounted externally of the engine casing, a plurality of fuel injection spraybar bundles, a metering valve housing associated with one or more of the spraybar bundles, each housing including a mounting pad for mounting the housing and spraybar bundle directly to the fuel manifold assembly, thereby supporting the bundle in the radial direction, a seal and damper assembly which mounts to



the casing and supports the bundle in the axial direction while permitting relative thermal expansion between the bundle and the casing.

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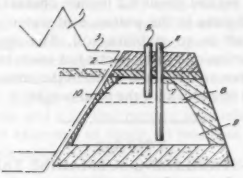
3,793,839

## DEVICES AND THE ART OF PREVENTION OF DISTURBANCES IN THE TECTONICS OF THE EARTH'S CRUST

Emanuel M. Josephson, New York, N.Y., assignor to Irving Seidman, New York, N.Y.

Filed Mar. 18, 1971, Ser. No. 125,621
Int. Cl. E02d
U.S. Cl. 61—35 12 Claims



The purpose of this invention is to prevent earthquakes and other disturbances in the crust of the earth by averting loss of support to its structures by replacement of support lost by withdrawal or removal of substances contained in it at the point of the withdrawal or removal, wherever possible; and by the prevention of loss of substances in its structure that support it, where advisable or feasible. In the case of oil production, the withdrawn oil and the support that the oil structure gives overlying structures is effectively replaced by water, mud or other substances, introduced preferrably at the time and at the point of oil production into a level of the oil structure below the oil in amounts sufficient to maintain the initial bottom-hole pressure as well as the table level of water in overlying structures, without effecting to potability thereof.

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3,793,840

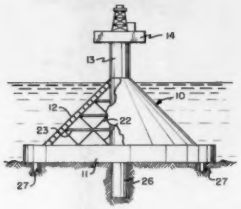
## MOBILE, ARCTIC DRILLING AND PRODUCTION PLATFORM

George E. Mott, Metairie, and James P. Wilbourn, New Orleans, both of La., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 18, 1971, Ser. No. 189,972
Int. Cl. E02b 17/00
U.S. Cl. 61—46.5 5 Claims

The invention relates to a marine platform adapted to be removably positioned at an offshore body of water, the surface

of which is periodically subjected to sheet ice and floating ice masses. The platform includes a controllably buoyant foundation-like base at its lower end, which normally rests on the ocean floor. A shell-like body extends upwardly from said base and is defined on its external surface by a progressively decreasing cross sectional area from the body lower end, to a




point adjacent the upper end. A work deck disposed at, and operably carried at the body upper end includes equipment necessary to function at said off-shore site. A caisson extending uprightly through the platform is partially embedded into the substratum beneath the platform, firmly anchoring the latter and protecting wells during and after a drilling operation.

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**3,793,841**

**METHOD OF MAKING AND USING SOIL STABILIZER**

**Otto L. Dozsa, Palos Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.**

**Filed Jan. 25, 1971, Ser. No. 109,410**

**Int. Cl. B01j** *2/00;* **C04b** *1/00;* **E02d** *3/12*

**U.S. Cl. 61—36 R** **7 Claims**

An agglomerate of CaO and $Ca(OH)_2$ the thickness of which does not exceed about 0.2 inches, characterized by the ability to disintegrate in the presence of water into particles sufficiently small as to stabilize soil. The agglomerate is produced by continuously compacting at room temperature a mixture of the two components wherein the amount of CaO is between 40 and 60 percent of the total weight.

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**3,793,842**

**SELF-STABILIZING SUBMARINE TANK**

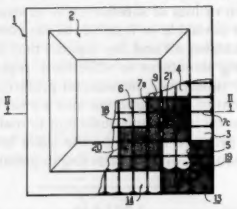
**Roger Lacroix, Sceaux, France, assignor to Sea Tank Co., Paris, France**

**Filed Mar. 6, 1972, Ser. No. 231,933**

**Claims priority, application France, Mar. 5, 1971, 71.07723**

**Int. Cl. B65g** *5/00;* **E02d** *27/38*

**U.S. Cl. 61—46.5** **5 Claims**




A submarine tank formed of pre-stressed concrete comprises central cells and outward peripheral ballast cells. The cells are interconnected and can be filled with liquid hydrocarbons. Appropriate control means can be provided for effectuating the controlled submerging of the tank. Vertical pillars can be provided to remove any vertical force effect of swells. Lower stud members can be provided on the bottom of the tank.

**3,793,843**

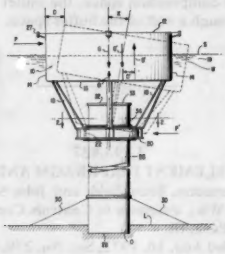
**FLOATING BREASTING PLATFORM**

**Arick S. Malkiel, 94-09 68th Ave., Forest Hills, N.Y. 11375**

**Filed Sept. 14, 1972, Ser. No. 289,116**

**Int. Cl. E02b** *3/22;* **B63b** *21/00*

**U.S. Cl. 61—46** **12 Claims**



A vessel-like floating platform, adapted for the breasting and berthing of transport vessels in a body of water at an offshore location and capable of resisting wave and impact forces and of adjusting to variations in water level, comprises a platform anchored or moored by a universal coupling to a vertical shaft embedded in the land surface underlying the body of water. The universal coupling comprises a downwardly extending outrigger structure which engages by means of a universal connection the surface of an annular member slidably mounted on the upper portion of the shaft, thereby enabling vertical, rotational, and angular movement of the platform and capability of adjusting to a position relative to prevailing wind, wave, and current forces for optimum in breasting the approaching vessels.

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**3,793,844**

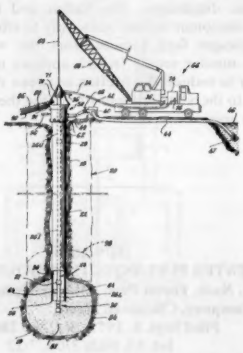
**SYSTEM FOR INCREASING THE LOAD-BEARING CAPACITY OF SOIL**

**Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.**

**Division of Ser. No. 131,919, April 7, 1971, Pat. No. 3,707,848. This application Aug. 14, 1972, Ser. No. 280,157**

**Int. Cl. E02d** *7/20*

**U.S. Cl. 61—63** **5 Claims**



Process and system for increasing the load-bearing capacity of soil by producing load-bearing columns formed of densely compacted granular material, such as sand or gravel or of concrete. For producing each column, the granular material or concrete is fed down through a hollow member, and an air

gun supported at the lower end of a pipe assembly extending down coaxially through the hollow member is actuated to produce powerful impulses to impel the soil outwardly away from the lower end of the hollow member to compact the soil and then to impel the granular material or concrete outwardly to distribute it into the resulting cavity formed in the compacted soil. When sufficient material has been distributed and compaced by the powerful impulses from the air gun, the hollow member and pipe assembly are withdrawn an increment of distance, and then the steps are repeated to distribute and compact more of the desired material at a level above the first deposit, and so forth, to create a column of such material. If desired to create an encased concrete column, the pipe assembly is withdrawn from the interior of the hollow member, which is then filled with concrete. To facilitate the initial insertion of the hollow member into the soil, water is jetted down through it while the air gun is actuated producing powerful impulses to impel the soil away from the lower end, and to compact the soil cylindrically about the descending member to enhance lateral support. A novel air gun energy source is adapted to be operated while embedded in soil, poured concrete, sand, grit, and similar hostile environments. Columns of more coarsely granular material can be produced in the soil to enable ground water to percolate up, the ground water being released by intense, repeated air gun impulses.

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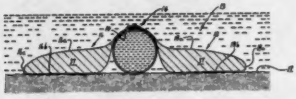
**3,793,845**

**APPARATUS AND METHOD FOR ANCHORING SUBMERGED CONDUIT**

**James M. Keith, Sunnyvale, Calif., assignor to Marcona Corporation, San Francisco, Calif.**

**Filed July 20, 1972, Ser. No. 273,447**
**Int. Cl. E02d** *15/06*
**U.S. Cl. 61—72.1** **12 Claims**



Elongate flexible envelope draped over submerged conduit defining elongate lobes along side the same which when partially filled with non-soluble particulate matter such as sand serves to anchor the conduit.

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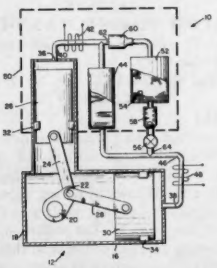
**3,793,846**

**DECONTAMINATION METHOD AND APPARATUS FOR CRYOGENIC REFRIGERATORS**

**Axel G. Dehne, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Filed Nov. 28, 1972, Ser. No. 310,199**
**Int. Cl. F25b** *9/00*
**U.S. Cl. 62—6** **13 Claims**



Cryogenic refrigerator system is provided with a contaminant adsorber in the cold region of the refrigerator which can be selectively connected into the cryogen gas circuit in such a position as to receive warm gas passing out of the regenerator to purge the regenerator into the adsorber.

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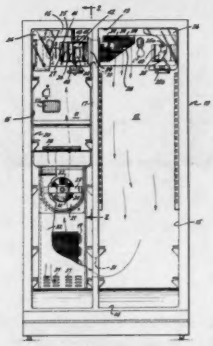
**3,793,847**

**REFRIGERATION APPARATUS**

**John A. Scarlett, and Eugene L. West, Jr., both of Richmond, Va., assignors to Philco-Ford Corporation, Blue Bell, Pa.**

**Filed Mar. 16, 1973, Ser. No. 341,891**
**Int. Cl. F25b**
**U.S. Cl. 62—190** **12 Claims**



A dual-compartment refrigerator having a single evaporator, a single fan, and ducts associated therewith for directing air from within each compartment over the evaporator, and for returning the air to the compartments. Operation of the evaporator is under the control of a thermostat in the warmer, food storage compartment, and temperature of the colder, frozen storage compartment is established and maintained by a manually adjustable, compound damper effective to proportion air flow between the compartments and the evaporator. The compound damper includes a first portion adjustable to establish the desired temperature differential as between the compartments, and a second portion adjustable according to season, or to extremes of usage, to maintain desirable temperature levels within each compartment.

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**ERRATUM**

For Class 62—315 see:
Patent No. 3,793,861

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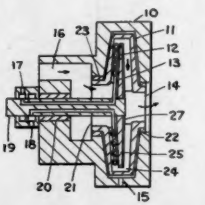
**3,793,848**

**GAS COMPRESSOR**

**Michael Eskeli, 6220 Orchid Ln., Dallas, Tex. 75230**

**Filed Nov. 27, 1972, Ser. No. 309,909**
**Int. Cl. F25d** *9/00*
**U.S. Cl. 62—402** **3 Claims**



A method and apparatus for compressing gases, wherein a gas is compressed in a continuous flow centrifuge provided

with cooling. The gas enters said centrifuge near axis of rotation, and leaves near axis of rotation, thus providing for low work input to the compressor. Gas to be compressed may be air, and the coolant may be water. Leaving gas after compression will have lower temperature than at compressor entry.

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**3,793,849**

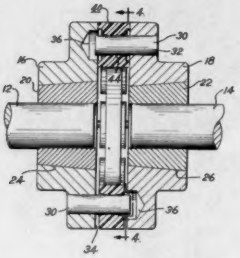
**SHAFT COUPLING AND ELEMENT THEREFOR**

**Holmes A. Downey, R.R. No. 3, Bremen, Ind.**

**Filed Nov. 4, 1971, Ser. No. 195,570**

**Int. Cl. F16d** *3/78*

**U.S. Cl. 64—13** **14 Claims**



A flexible coupling for connecting two shafts in end to end relation in which there are flanges for each of the shafts, a plurality of spaced pins secured in each of said flanges and projecting toward the other flange, and a flexible element of elastomeric material disposed between the flanges and having holes for receiving and gripping the pins of each of the two flanges. The flexible element, which is preferably constructed of polyurethane, contains bosses around each of the holes and an intervening area of lesser thickness for improved flexibility between the holes. Spacer protrusions are provided on opposite sides of the element for positioning the element between the two flanges.

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**3,793,850**

**PATTERNING SYSTEM FOR A MULTI-FEED CIRCULAR KNITTING MACHINE**

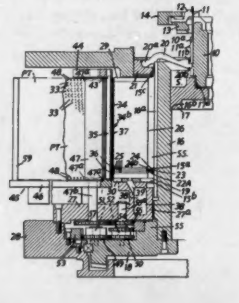
**William James Wills-Moren, Stevington, and Walter Goadby, Evington, both of England, assignors to Camber International (England) Limited, Leicester, England**

**Filed July 6, 1971, Ser. No. 159,742**

**Claims priority, application Great Britain, July 16, 1970, 34465/70.**

**Int. Cl. D04b** *15/68*

**U.S. Cl. 66—50 R** **5 Claims**



A multi-feed circular knitting machine equipped with needles selectively raised to different heights by jacks having patterning butts arranged to be acted upon by air-operated selector cams. The latter are in pairs stacked into housings, one in advance of each feed. The two cams of each pair are for raising needles, via jacks, to tucking and clearing heights respectively. To each stack of selector cams there is a block of fluidic elements with sensing orifices in alignment with channels of information carried by a punched tape or an apertured drum driven in time with the machine. The selector cams are pushed forward by low pressure air and retracted by induced vacuum. The jacks are in a cylinder larger than a cylinder accommodating the needles, movement transmitting and amplifying levers being provided between the two whereby short movements of the jacks are converted into longer movements of the needles.

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**3,793,851**

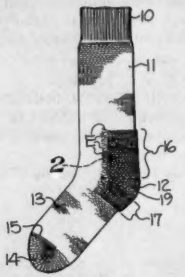
**BOOT SOCK**

**James L. Thorneburg, Statesville, N.C., assignor to Thorneburg Hosiery Mills, Inc., Statesville, N.C.**

**Filed May 19, 1972, Ser. No. 255,095**

**Int. Cl. D04b** *9/46*; **A41b** *11/02*

**U.S. Cl. 66—185** **7 Claims**



This sock is particularly adapted for use with western type boots in which the heel portion is enlarged to a greater extent than the heels of regular boots and shoes. The entire length of the leg, foot and heel portions of this sock are knit of one or more body yarns and a main terry yarn forms terry loops throughout either the entire inner surface of the sock or at least in the heel. An auxiliary terry yarn is knit in plated relationship with the main terry yarn in at least the heel portion and may be knit in the adjacent areas above and below the heel portion and forms additional terry loops to provide additional fabric thickness in the heel and adjacent areas so that the heel portion of the sock fills in the enlarged heel of the western boot. The yarns forming the terry loops are hydrophobic to wick any moisture from the inside of the sock and away from the foot of the wearer.

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**3,793,852**

**TENSION LET OFF DEVICE FOR A KNITTING MACHINE**

**Edwin I. Adler, Providence, R.I., assignor to Atlas Braid Company, Cumberland, R.I.**

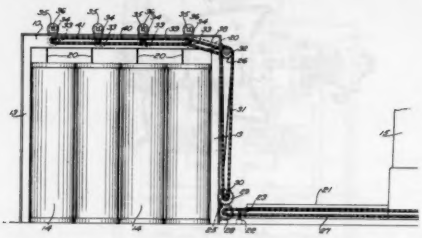
**Filed May 24, 1972, Ser. No. 256,430**

**Int. Cl. D04b** *15/88*

**U.S. Cl. 66—152** **8 Claims**

The device pertains to a knitting machine for knitting a plurality of narrow elastic tapes using elastic yarn. It comprises a rectangular supporting frame on vertical legs so that the frame straddles a plurality of rows of roving cans or bins. A pair of vertically contiguous rollers are mounted on the frame extending across each row of cans. The rollers in each pair are provided with meshing gears at one end so that they rotate in opposite directions. The lower roller of each pair is connected by a sprocket chain with the lower roller of the adjacent pair so that a single drive will drive all the rollers. A single upper roller at the front of the frame forms the drive for the other

rollers. The knitted tapes leave the knitting machine at the bottom under tension and pass around a driven roller which is driven from the knitting machine drive. This roller is connected by a sprocket chain to a lower roller at the front of the frame which it drives at the same speed. The lower roller is connected by a sprocket chain to the front upper roller with a reduced gear drive which cuts the speed of the upper roller to half the speed of the lower roller. All the frame rollers, driven



from the front upper roller operate at this reduced speed. The knitted tape passes around the lower front roller and up to the upper front roller. Then around this and through the pairs of rollers on the frame. Tension on the tapes is reduced by half at the upper front roller due to the reduced speed. As each tape reaches a predetermined roving can, it is directed downwardly from the rollers, releasing the remaining tension. Each tape passes through one or more pairs of rollers on the frame until its can is reached.

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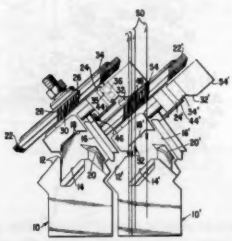
**3,793,853**

**WHEEL-FEEDING CAM FOR CIRCULAR KNITTING MACHINES**

**Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, both of Fla., assignors to The Singer Company, New York, N.Y.**

**Filed June 9, 1972, Ser. No. 261,456**
**Int. Cl. D04b** *15/76*
**U.S. Cl. 66—50 A** **6 Claims**



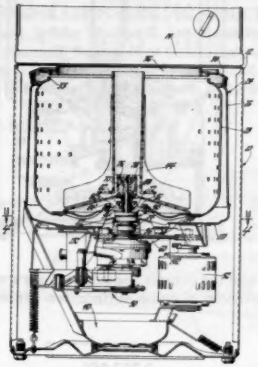
A circular knitting machine with pattern wheels is provided with wheel-feeding cams which guide the butts of needles into pattern wheel slots. Each such wheel-feeding cam preferably includes an extension running parallel to a pattern wheel and effective to lock needle butts in their pattern wheel slots.

**3,793,854**

**BULKHEAD MOUNTING ARRANGEMENT FOR TUB SEAL AND DRIVE MECHANISM**

**Byron L. Brucken, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 13, 1972, Ser. No. 305,946**
**Int. Cl. D06f** *23/04*
**U.S. Cl. 68—23.7** **3 Claims**



A domestic clothes washer has an agitator in a nested pair of tubs. The inner tub is rotatable and the outer tub is generally fixed against rotation and adapted to contain water. The outer tub includes a bottom bulkhead having brackets thereon for supporting an agitating and spinning drive mechanism therebelow. The bulkhead also has a central boss forming a pocket for directly mounting a water seal and a guide surface for centering the drive mechanism. The drive mechanism is substantially preassembled and properly oriented with respect to the clothes washer when it is attached to the brackets on the bulkhead. The portion of the mechanism for driving the inner tub and the agitator extends through the bulkhead in water-sealed relationship with the central boss by virtue of the water seal in the pocket.

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**3,793,855**

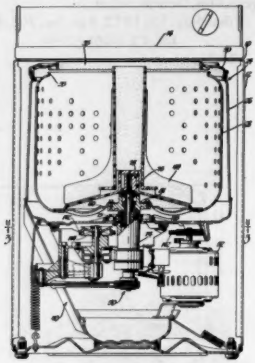
**BULKHEAD MOUNTING AND SEALING ARRANGEMENT FOR IMPROVED ROLLER DRIVE MECHANISM**

**Kenneth O. Sisson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 13, 1972, Ser. No. 305,947**
**Int. Cl. D06f** *23/04*
**U.S. Cl. 68—23.7** **5 Claims**

A domestic clothes washer has an agitator in a nested pair of tubs. The inner tub is rotatable and the outer tub is generally fixed against rotation and adapted to contain water. The outer tub includes a bottom bulkhead having brackets welded thereon for supporting an improved roller drive agitating and spinning mechanism therebelow. The drive mechanism is completely preassembled so that seals and operation of the mechanism may be pretested before the mechanism is supported beneath the outer tub. A central opening in the bulkhead is large enough to receive in preassembled form from below the seals and operating portions of the preassembled mechanism which normally repose within the outer tub. A

central boss on the bulkhead forms a pocket around the central opening for sandwiching an O-ring between the



mechanism and the central opening to form a water seal. The boss also provides a guide surface for centering the drive mechanism.

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**3,793,856**

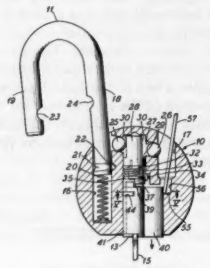
**PADLOCK AND KEY CYLINDER RELEASE**

**Guillermo W. Lippisch, Park Forest South, Ill., assignor to Junkunc Bros. American Lock Company, Crete, Ill.**

**Filed Oct. 13, 1972, Ser. No. 297,223**

**Int. Cl. E05b** *9/04, 67/22*

**U.S. Cl. 70—38 A** **4 Claims**



Padlock having plunger releasably holding key cylinder to padlock casing and accommodating quick change of the key cylinder. The padlock casing has parallel bores for the shackle, one of which bores is of a lesser depth than the other. The key cylinder is carried in the casing for the lock between the bores and terminates beneath the bottom of the bore of lesser depth. The bore of lesser depth is counterbored to afford access to a plunger guided for movement transversely of the key cylinder and biased outwardly of the key cylinder into the counterbore to hold the key cylinder to the casing. A washer having a quadrant extending inwardly therefrom retains the key plug to the key cylinder. The surface of the key plug intercepts the plunger and prevents depression thereof and release of the key cylinder when the key plug is in a locked condition. A slot for the washer and quadrant affords access of the plunger to the key plug, to be depressed within the slot when the key plug is in an unlocked position. Access is afforded to the outer end of the plunger by a thin screwdriver or other tool upon removal of the short leg of the shackle from its bore.

**3,793,857**

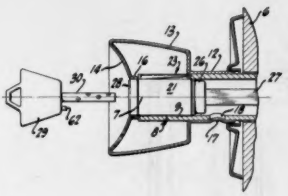
**REMOVABLE CYLINDER FOR A LOCK**

**Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, Burlingame, Calif.**

**Filed Sept. 18, 1972, Ser. No. 290,124**

**Int. Cl. E05b** *33/00*

**U.S. Cl. 70—368** **7 Claims**



A lock includes a spindle tubular about an axis and having a wall opening. A knob is fastened on the spindle and has an aperture in axial alignment with the spindle. A cylinder body having a radially projecting tongue is disposed to slide in the spindle and move through the aperture except as obstructed by the tongue situated in the opening and confined by the marginal walls of the spindle and of the knob. The tongue can be moved radially into a non-obstructing position by a tool moved in an arcuate path to engage and move the tongue or a connector thereon. A key-actuated plug is rotatable within the body between a locked position and other positions and carries the tool from the locked position of the plug into the other positions, in which the tool engages and moves the tongue or the connector thereon.

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**3,793,858**

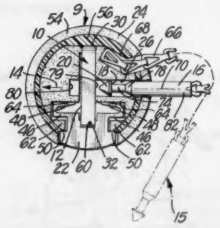
**CONNECTOR**

**Ralph W. Jones, c/o West Coast Chain Mfg. Co., 2242 E. Foothill Blvd., Pasadena, Calif. 91107**

**Filed Apr. 30, 1971, Ser. No. 139,015**

**Int. Cl. A44b** *17/00, 15/00*

**U.S. Cl. 70—457** **6 Claims**



A connector wherein a shaft member has projection means such as lip for engaging a forwardly facing edge of a strip to prevent rearward movement of the shaft member relative to the strip. Actuating means are provided for moving the strip from a normally closed position of engagement with the projection means to an open position of disengagement.

3,793,859

## METHOD AND APPARATUS FOR CONTROLLING CROWN IN A PLATE ROLLING MILL

John D. Sterrett, Williamsville, and Alfred J. Baeslack, East Aurora, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1972, Ser. No. 251,961
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 8 Claims

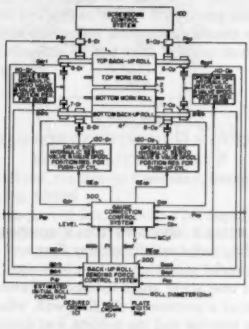


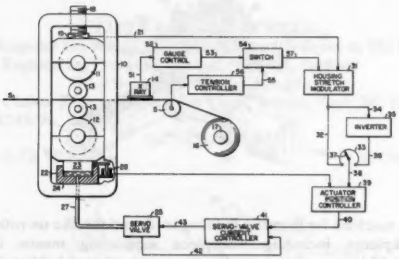
Plate width and roll diameter input signals are translated into roll and bending force spring constant representations which are multiplied by total roll and bending force signals, respectively, and added to desired roll and crown representations to produce a crown error signal. The error signal is proportionally integrated to provide a bending force reference signal which is employed to develop the proper roll bending forces to produce the desired crown.

3,793,860

## SYSTEM TO COMPENSATE FOR ROLL ECCENTRICITY EFFECTS AND/OR TO SIMULATE A MILL WITH VARIABLE STRETCH CHARACTERISTICS

Antonio V. Silva, c/o Westinghouse Electric S.A. Caixe Postal 5156, San Paulo, Brazil

Filed Dec. 4, 1972, Ser. No. 312,178
Int. Cl. B21b *37/12*
U.S. Cl. 72—11 16 Claims



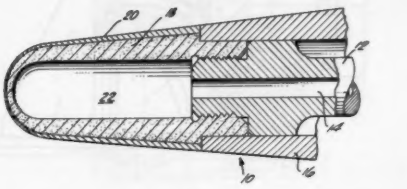
A rolling mill control system which, in one aspect, compensates for the effects of roll eccentricity during operation of the rolling mill. The control system includes circuitry which produces a control signal for rapid and accurate adjustments to hydraulic roll force actuators in a manner to prevent increases in the roll separating force. This circuitry further includes an outer gage control loop and/or tension control loop for automatic gage control of the rolling mill. According to another aspect of the disclosure, the control system simulates a rolling mill structure having variable spring constants whereby an operator may select a desired mode of rolling mill control. To simulate an infinitely stiff mill construction, the control system provides a control signal for rapid adjustments of the roll force actuators in a direction and by the exact amount to compensate for changes in the housing stretch. The control system simulates infinitely soft mill construction by rapid adjustments to the roll force actuator in a direction and by the exact amount to resist changes in the rolling force.

3,793,861

## TRANSPIRATION COOLING STRUCTURE

Kurt Burkhard, Irvine; Thomas G. Lee, Anaheim, and John R. Schuster, Fountain Valley, all of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Mar. 3, 1972, Ser. No. 231,619
Int. Cl. F28c *1/00*
U.S. Cl. 62—315 6 Claims



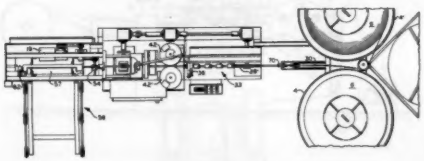
A high surface temperature transpiration cooling structure that substantially reduces coolant requirements is described. It is a dual layer material consisting of a thin outer overlay of a high melting temperature, low thermal conductivity, porous ceramic material of high permeability applied on a thicker sintered metallic substrate of a high strength material of low permeability. A coolant is expelled through this structure and out the heated surface to keep the surface temperature below the overlay melting point. The inner layer controls coolant distribution and the outer layer buffers the inner layer without creating a high back pressure. This structure may be used whenever it may be subjected to a high heating environment.

3,793,862

## METHOD AND APPARATUS FOR CONTINUOUSLY FORMING CONTOURED METAL STRIPS

William R. Eddy; Frank P. Richards, and James K. Thompson, all of Kansas City, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1972, Ser. No. 284,699
Int. Cl. B21d *55/00*; B21b *1/00*
U.S. Cl. 72—4 19 Claims



This invention resides in the method and apparatus for continuously forming contoured metal strips. In the invention a continuous metal strip package is maintained on a rotatable table, tension is placed on the continuous strip and the strip is fed from the strip package into a contouring zone at which location forces are exerted on the strip by at least one contouring roll set for continuously bending the strip to a preselected configuration. Forces are thereafter exerted on the contoured

strip to straighten the strip to form a linear contoured continuous strip and indent said strip at preselected locations. The continuous, linear contoured strip is thereafter severed at preselected locations and assembled for further handling.

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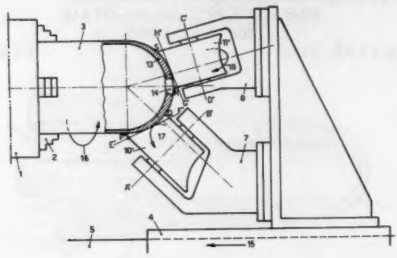
3,793,863
**DEVICE FOR THE MANUFACTURE OF METAL CYLINDERS**

**Diego Groppini, Via Stelvio, Dalmine, Italy**

**Filed July 3, 1972, Ser. No. 268,738**
**Claims priority, application Italy, July 9, 1971, 26804/71**
**Int. Cl. B21d *41/04***
**U.S. Cl. 72—84** **7 Claims**



A device for manufacturing metal cylinders and in particular for closing one end of a tubular metallic piece, which comprises a chuck for holding the other end of the piece and a forming head with at least two idle rolls having a concave profile. In a first embodiment the axis of each roll lies in a plane passing through the axis of the piece to be worked. In a second embodiment the axis of each roll passes outside of the plane passing through the axis of the piece and through the median point of the arc of contact between roll and piece and preferably forms an angle comprised between 0° and 30° with the plane passing through the axis of the piece to be worked.

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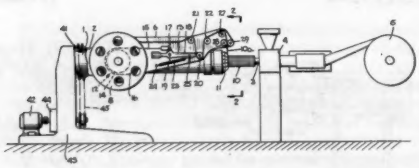
3,793,864
**WAVEGUIDE WINDING MACHINE**

**Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societe per Azioni, Milan, Italy**

**Filed Nov. 8, 1972, Ser. No. 304,653**
**Claims priority, application Italy, Nov. 15, 1971, 31095/71**
**Int. Cl. B21d *11/08***
**U.S. Cl. 72—136** **10 Claims**

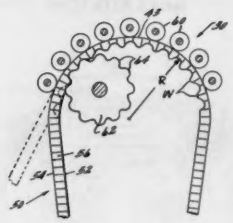


Apparatus for manufacturing a waveguide having an inner wall formed by one or more helically wound, insulated straps wound on edge and an outer covering of insulating material, said apparatus comprising strap reels, feed rollers, reel brakes and strap tension devices mounted for rotation around a fixed, varying diameter mandrel on which the strap or straps are wound on edge and means for advancing the turns axially of the mandrel having a plurality of cam operated pistons for pushing the turns along the mandrel. The mandrel is followed by a covering insulation extruder and a collecting reel.

3,793,865
**MIXER FABRICATION**

**Roy A. Krabacher, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio**

**Filed July 5, 1972, Ser. No. 269,017**
**Int. Cl. B21d *47/00***
**U.S. Cl. 72—197** **10 Claims**



A turbofan mixer is fabricated from a structural panel of the variety including substantially planar first and second walls and a filler material sandwiched therebetween. The mixer includes at least one acute angle formed by bending the structural panel about a portion of the first wall, whereby the first wall forms the interior and the second wall forms the exterior of the angle. The first and second walls are protected from crushing and stretching proximate the apex of the angle during the bending process by the prior or contemporaneous deformation of the aforementioned portion of the first wall into a form having a plurality of repetitive waves in the cross section thereof, whereby the first wall is reduced in length relative to the smooth outer wall. The first wall may be deformed by contact with a toothed roller or a reciprocable die or by other appropriate means.

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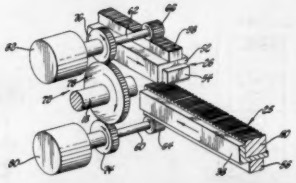
3,793,866
**GEAR FORMING MACHINES**

**Marvin R. Anderson, Grosse Pointe Shores, and Harald N. Jungesjo, Rochester, both of Mich., assignors to Anderson-Cook Incorporated, St. Clair Shores, Mich.**

**Filed Apr. 4, 1972, Ser. No. 240,544**
**Int. Cl. B21h *3/06***
**U.S. Cl. 72—88** **3 Claims**



A machine for pressure forming teeth and the like on rotary workpieces including workpiece supporting means for rotatably supporting a workpiece, a pair of tool holders for tooth forming tools mounted for rectilinear movement in spaced, substantially parallel paths transversely of and on opposite sides of the rotary axis of the workpiece supported by the workpiece support means, and a drive assembly for simultaneously driving the tool holders in opposite directions along their respective paths. The drive assembly inoludes: (1) a pair of driving racks, one of the driving racks being secured to one of the tool holders and disposed parallel to the path of movement thereof, and the other of the driving racks being secured to the other of the tool holders and disposed parallel to the path of movement thereof, (2) a pair of spaced, rotatable

shafts extending substantially transversely of the driving racks, one of the shafts being drivingly engaged with one of the racks to cause rectilinear movement of the associated tool holder along its path of movement in response to rotation of the shaft, the other of the shafts being drivingly engaged with the other of the racks to cause rectilinear movement of the associated tool holder along its path of movement in response to rotation of the shaft, (3) a gear train engaged between the shafts to cause synchronous simultaneous rotation of the shafts and corresponding movement of the tool holders in opposite directions, and (4) power means for driving the shafts. Selectively adjustable deflection controlling means is provided for controlling deflection of the tool holders during a pressure forming operation.

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**3,793,867**

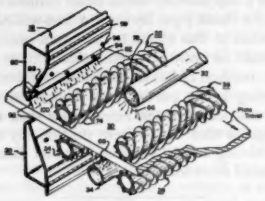
## APPARATUS FOR CONTINUOUSLY QUENCHING A HEATED METAL PLATE

**Franklin C. Safford, c/o Drever Company, Bethayres, Huntingdon Valley, Pa. 19006**

**Continuation-in-part of Ser. No. 182,724, Sept. 22, 1971. This application June 1, 1972, Ser. No. 258,722**

**Int. Cl. B21b** *27/10, 45/02*

**U.S. Cl. 72—201** **9 Claims**



An apparatus for continuously quenching a heated metal plate moving and restrained in a plane. A pair of quench headers are positioned above and below the plate each having a slot through which quench fluid is directed at an angle in the direction of plate movement. Beyond the impingement of the quench fluid on the plate are a pair of sral grooved rollers positioned and spaced apart engaging the top and bottom surfaces of the metal plate.

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**3,793,868**

## TAPER-ROLLING OF METAL

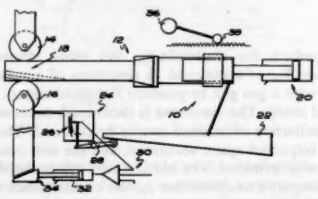
**Alexander Ian Wilson, Sheffield, England, assignor to The Hille Engineering Company Limited, Sheffield, England**

**Filed Sept. 20, 1972, Ser. No. 290,657**

**Claims priority, application Great Britain, Sept. 24, 1971, 44745/71**

**Int. Cl. B21b** *1/42*

**U.S. Cl. 72—226** **10 Claims**



A method of taper rolling for producing leaf springs and the like, including the step of reducing the width of the deformable blank, between a pair of auxiliary rolls, to a width somewhat less than the required final width so that during a final "pass" between a pair of main rolls the blank returns to the required final width as it is brought to the required taper form.

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**3,793,869**

## ROLLING DEFORMATION OF WIRES AND SIMILAR ELONGATED ELEMENTS

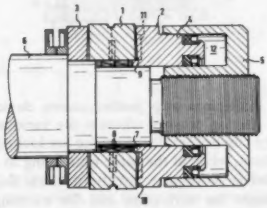
**Walter Hufnagl, Lommelstrasse 9, Munich-Solln, and Paul von Sigriz, Haus 55, Sachsenkam/Bezirk, Tolz, both of Germany**

**Filed Mar. 15, 1972, Ser. No. 234,835**

**Claims priority, application Germany, Mar. 17, 1971, 2112966**

**Int. Cl. B21b** *27/02*

**U.S. Cl. 72—236** **27 Claims**



A wire or similar elongated element of metallic material is advanced between at least one pressure roller and at least one counter-roller and is engaged with the pressure roller under pressure to be rollingly deformed; the pressure roller may be profiled to form ribs, grooves or the like on the wire. The pressure acting from the wire on the roller frequently reaches such a force that it tends to destroy the pressure roller, and in accordance with the invention a counter-force is exerted upon the roller, to compensate for the force acting on the same from the wire so as to prevent its destruction.

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**3,793,870**

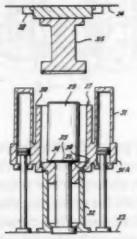
## PRESS

**Herbert Allen, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.**

**Filed Mar. 29, 1972, Ser. No. 239,207**

**Int. Cl. B21c** *23/00*

**U.S. Cl. 72—255** **6 Claims**



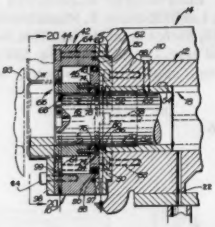
There is disclosed a press for use in forming tubing by piercing a billet and then shearing a portion from the end of the pierced hole.

3,793,871

## BLANK HOLDER DEVICE

Charles M. Kinghorn, Moraga, Calif., assignor to Kaiser Aluminum & Chemical Coorporation, Oakland, Calif.

Filed Feb. 27, 1973, Ser. No. 336,174
Int. Cl. B21d 24/04
U.S. Cl. 72—349 11 Claims



Improved multipiece cup holder sleeve device for deep drawing and ironing presses, wherein the various sections of the multipiece cup holder sleeve device are locked together in a unique fashion, while at the same time being so constructed and assembled as to require but the minimal fluid pressure, e.g. air pressure for activation and for exerting uniformly balanced and minimal working pressures against the bottoms of thin metallic cup-shaped workpieces prior to engagement by and movement of such a workpiece into the initial die of the press by the press ram or punch.

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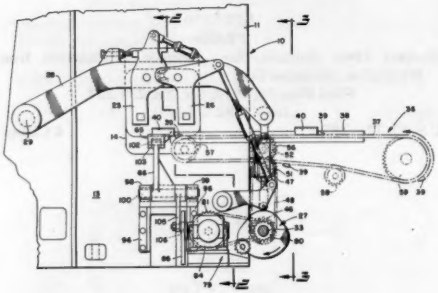
3,793,872

## FORGING PRESS FEED MECHANISM

Warner C. Logan, Timberlake, Ohio, assignor to The Ajax Manufacturine Company, Cleveland, Ohio

Filed Sept. 2, 1971, Ser. No. 177,298
Int. Cl. B21d 43/10
U.S. Cl. 72—422 17 Claims



A vertical forging press feeding mechanism to transfer a heated billet from outside the press to the beam transfer pickup station including a conveyor for transporting heated billets and a stock loading arm for receiving the billets from said conveyor, the generally horizontally extending stock loading arm being mounted on two parallel levers adapted to be driven for oscillation in timed relationship to both the conveyor and the beam transfer mechanism, whereby the stock feed arm upon reception of the billet swings upwardly through a limited arcuate path to deliver such billet to the beam transfer pickup station and subsequently returns to a position adjacent the conveyor for repeating the feed cycle.

3,793,873

## METHOD OF HOT FORMING OF HOLLOW MUSHROOM TYPE METALLIC PARTS

Tokushige Iwata; Nobuyoshi Hojyo; Tokushi Ando, and Masao Miwa, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubishi Jukogyo Kaisha, both of Tokyo, Japan

Filed June 1, 1972, Ser. No. 258,854
Claims priority, application Japan, June 10, 1971, 46-49548
Int. Cl. B21k 1/22
U.S. Cl. 72—318 8 Claims

This invention relates to a method of hot forming from a blank pipe hollow mushroom type metallic parts having a hollow stem and a cap portion whose outer diameter is far larger than that of the blank pipe. By using a thin-walled pipe whose size corresponds to that of the hollow stem processing of the hollow stem can be omitted or minimized. More particularly, it relates to a method of hot forming hollow valves for engines or parts having a cap portion and hollow stem, the outer diameter of said cap portion being more than two or three times as large as that of the stem portion, by using a thin-walled pipe having a ratio between its outer diameter and its wall thickness of more than 3.5.

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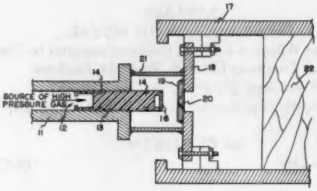
3,793,874

## METHOD FOR DETERMINING FRACTURE TOUGHNESS USING SMALL SPECIMENS

Donald A. Shockey, Menlo Park, and Donald R. Curran, Palo Alto, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Aug. 25, 1972, Ser. No. 283,785
Int. Cl. G01n 3/30
U.S. Cl. 73—12 9 Claims



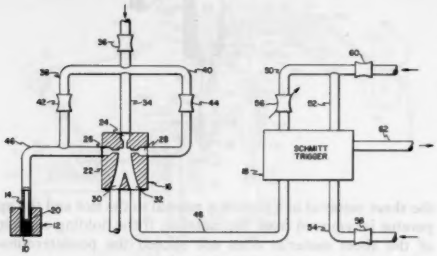
A method for determining the plane strain fracture toughness $K_{Ic}$ of a material. A specimen of a material is impacted with a gas gun to produce flat plate impact and hence uniaxial strain. The specimen is recovered, sectioned and the size distribution of internal cracks determined. The specimen is then impacted again, sectioned, and the new crack size distribution determined. The old and new crack distributions are then compared to determine $a_c$, the critical crack half length of radius above which cracks grew and below which they did not. Knowing the tensile stress caused by the second impact and the critical crack half length, the fracture toughness is then calculated from the appropriate fracture mechanics expression.

3,793,875

## METHOD AND APPARATUS FOR SENSING THE PRESENCE OF THREADS ON A SURFACE

Walter J. Jurkiewicz, Philadelphia, Pa., assignor to Robertshow Controls Company, Richmond, Va.

Filed Feb. 18, 1972, Ser. No. 227,538
Int. Cl. G01b 13/22
U.S. Cl. 73—37.5 9 Claims




The method of determining the presence or absence of threads on a surface relies upon the difference in back pressure sensed by the probe of a fluidic system. Back pressure will be greater when the probe is inserted into an unthreaded bore or encompasses an unthreaded stud and will trigger an output indicating that no threads are present.

The apparatus for determining the presence or absence of threads on an object has no moving parts and includes a probe, a proportional center dump fluidic element connected to the probe and to a source of pressure, and a fluidic Schmitt trigger connected to amplify the output of the proportional element when the predetermined condition is sensed. Since the system operates on the difference in back pressure fed by the probe to the porportional element, it can be calibrated to generate an output signal indicating higher back pressure due to the absence of threads in a bore or on a stud.

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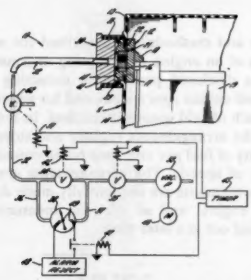
3,793,876

## BATTERY TERMINAL LEAK DETECTOR

Thomas L. Oswald, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Mich.

Filed Aug. 10, 1972, Ser. No. 279,377
Int. Cl. G01m 3/26
U.S. Cl. 73—46 2 Claims



A leak detector including a head with a resilient lip that is fitted closely around a battery container terminal assembly that is connected by a line to a source of vacuum. A pair of valves in the lines are opened to evacuate the head and pull the lip into sealing engagement with the periphery of the terminal assembly, and then both valves are closed and the pressure differential, if any, across the valve closest to the head is sensed. A leak is evidenced by development of a pressure differential across the first valve, and if the differential exceeds a predetermined value for a given time interval an alarm or reject circuit is actuated.

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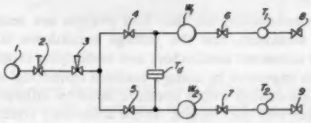
3,793,877

## AIR LEAKAGE DETECTOR, USING A DIRECT PRESSURE SYSTEM

Akira Fukuda, 2-22-8, Kasuga-cho, Nerima-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 250,751, May 5, 1972. This application May 5, 1972, Ser. No. 250,752
Claims priority, application Japan, Nov. 12, 1971, 46-105636
Int. Cl. G01m 3/02
U.S. Cl. 73—49.3 1 Claim



An object to be tested and a comparison object are placed in separate receptacles, the receptacles pressurized, isolated, and their pressure differential measured to detect small leaks in the test object. In order to determine larger leaks, a second pair of receptacles are provided which are later placed in communication with the first pair so that larger leaks may be detected. This application provides an additional pair of valves so that all receptacles are maintained at substantially the same pressure during the check for small leaks. The result of this arrangement is that the effect of small leaks in the valves between the two sets of receptacles is nulified.

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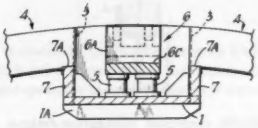
3,793,878

## LOAD SENSORS

John David Brunton, Denham, England, assignor to Taylor Woodrow Construction Limited, Southall, Middlesex, England

Filed Apr. 5, 1972, Ser. No. 241,210
Claims priority, application Great Britain, Apr. 7, 1971, 9000/71
Int. Cl. G01l 5/04
U.S. Cl. 73—88.5 R 8 Claims



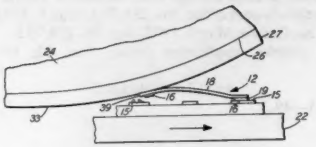
A load sensor that can be incorporated in a vessel that is to be circumferentially stressed by winding prestressing filaments or bands under tension around the vessel, the sensor being arranged to be mounted in a suitable cavity formed in the wall of the vessel at a zone such that the mouth of the cavity is bridged by prestressing filaments or bands when these are wound on to the vessel, and the sensor comprising a saddle member and the load sensing means serving, in use, to support the saddle member in the region of the mouth of the cavity such that prestressing filaments or bands bridging the mouth of the cavity apply loading to the saddle, which loading is sensed by the sensing means.

3,793,879

## TESTING AND INCREASING BREAKDOWN VOLTAGE OF CROSSOVERS

William H. Fowler, Bethlehem, Pa., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed June 19, 1972, Ser. No. 264,127
Int. Cl. G01n 3/08
U.S. Cl. 73—95 11 Claims



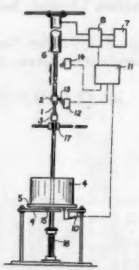
Crossover conductors on thin film circuits are tested for mechanical weakness, and the voltage breakdown strength between the crossover conductors and underlying crossunder conductors is improved by using a resilient cylindrical surface to bring a tape coated with a pressure sensitive adhesive into rolling contact with the circuits. As the adhesively coated tape separates from the circuits, an adhesive force breaks mechanically weak crossover conductors from the circuits. The voltage breakdown strength of mechanically strong crossover conductors is improved by an increased separation between the crossover and the crossunder conductors.

3,793,880

## REPEATING ELONGATION-FATIGUE TESTING MACHINE OF ELASTIC MATERIALS UNDER A CONSTANT LOAD

Nagatoshi Sugi, Yokohama; Hiichiro Yoshikawa, Kamakura, and Hideo Isokawa, Kawasaki, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Sept. 15, 1972, Ser. No. 289,310
Int. Cl. G01n 3/32
U.S. Cl. 73—100 4 Claims



A hydraulically operated elongation-fatigue machine for testing elastic materials. The machine includes a hydraulic and mechanical reciprocating drive system actuated by limit switches and solenoid valve.

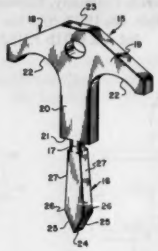
3,793,881

## APPARATUS FOR TESTING HOLDING CAPACITY OF SHEET MATERIAL

Robert L. Hallock, Jr., 48 Rockland Ave., Larchmont, N.Y. 10538

Filed Mar. 9, 1973, Ser. No. 339,789
Int. Cl. G01n 3/00
U.S. Cl. 73—102 4 Claims

An apparatus for piercing sheet material and forming an elongated slot therein after which the apparatus is turned substantially 90° and a reverse force is applied to the apparatus to test the holding capacity of the sheet material. If the holding capacity exceeds a predetermined value, the apparatus tears the sheet material in a direction normal to the slot and the apparatus is removed from the material. If the holding capacity of the sheet material does not exceed the predetermined value, such sheet material is removed.

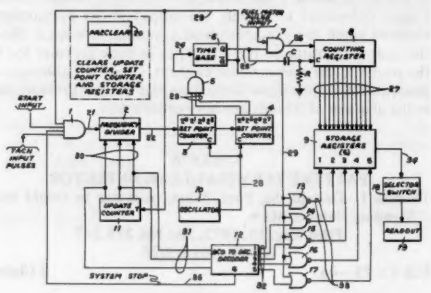


3,793,882

## MEASURING FUEL CONSUMPTION

Eugene F. Holben, Haddonfield, N.J., assignor to Conoflow Corporation, Blenheim, N.J.

Filed Oct. 20, 1971, Ser. No. 190,838
Int. Cl. G01m 15/00
U.S. Cl. 73—113 9 Claims



Apparatus and methods are described for measuring fuel consumption of an engine accelerating at constant load. The arrangements disclosed provide for detecting a plurality of predetermined engine rpm speeds and for generating a condition when each of said speeds is reached. In response to these conditions, the arrangements register and store an indication of the quantity of fuel per unit time being consumed at each of the plurality of speeds. The arrangements are controlled so that the measurements are sequentially made during acceleration of the engine, and so that the measurements can be selectably read out at a later time.

3,793,883

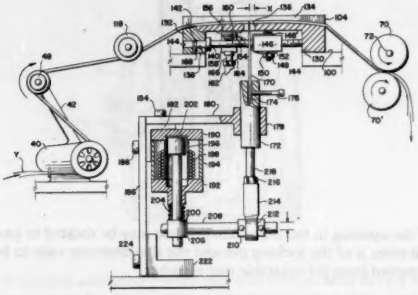
## YARN ENTANGLEMENT TESTER

Arthur M. Goldfarb, Abington; James Litterio, Levittown, and John H. Roth, Langhorne, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 19, 1972, Ser. No. 245,340
Int. Cl. G01n 33/36
U.S. Cl. 73—160 5 Claims

A yarn entanglement tester using a needle placed in intermingling obstruction of a traveling yarn. The intermingling

of the filaments in the yarn is detected by the needle point penetrating the yarn and as the needle is deflected through engagement of an entanglement, it makes a contact closure completing a resistive circuit which in turn activates a solenoid coil to retract its core, which carries the needle, thus removing the needle from the yarn. Simultaneously, a count is



made on a totalizing counter and once the circuit is opened by the needle being fully retracted, a spring action reinserts the needle into the fiber. The operational cycle of the detector is on the order of milliseconds. The tester is composed of two main units; a control display and testing assembly and a control unit assembly containing counting circuit control relays.

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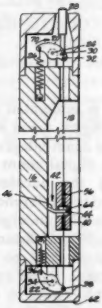
3,793,884

## LIQUID LEVEL MEASURING DEVICE

Thomas A. Fling, 155 Jackson, No. 905, San Francisco, Calif. 94111, and William F. Fling, 351 S. Fuller Ave., Los Angeles, Calif. 90036

Filed Dec. 27, 1972, Ser. No. 318,744
Int. Cl. G01f 23/06
U.S. Cl. 73—315 2 Claims



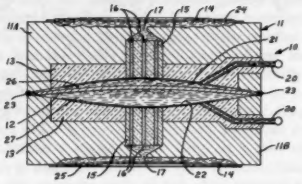
A liquid level measuring device is provided with a frame. A float member within the frame and a gripper member partially within the float member both surround a guide. Contact edges of the gripper member engage the guide. Means connected to the guide selectively disengage the gripper member from the guide.

3,793,885

## DIAPHRGAM CONSTRUCTION FOR DIFFERENTIAL PRESSURE TRANSDUCER

Roger L. Frick, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Mich.

Filed Sept. 5, 1972, Ser. No. 286,287
Int. Cl. G01l 9/12
U.S. Cl. 73—398 C 12 Claims



A diaphragm construction for a differential pressure transducer wherein the diaphragm is deflected under pressure, and which has means around the periphery thereof to isolate the diaphragm stresses from the mounting portion of the diaphragm.

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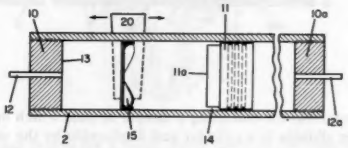
3,793,886

## CELL FOR COLLECTING AND MIXING FLUIDS

Gary W. Rosenwald, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Aug. 2, 1972, Ser. No. 277,441
Int. Cl. G01n 1/10
U.S. Cl. 73—421 R 7 Claims



Apparatus is disclosed for homogeneously blending a crude mixture of fluids prior to analysis of the mixture for accurately determining the quantity of each component therein.

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3,793,887

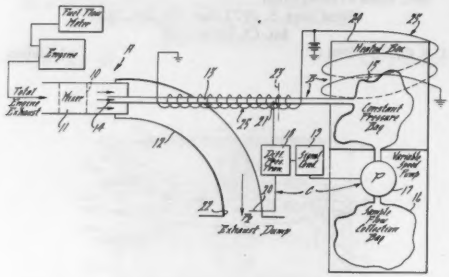
## ISOKINETIC SAMPLING PROBE

Richard D. Anderson, Southgate; Nicolas A. Azelborn, Ypsilanti, and Wallace R. Wade, Farmington, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1972, Ser. No. 312,419
Int. Cl. G01r 1/24
U.S. Cl. 73—421.5 R 10 Claims

A sampling and handling system for the exhaust of an automotive engine whereby emissions flowing through a through-duct are mixed, extracted through an isokinetic

probe, and maintained heated until analysis of the sampled gases is completed. A variable speed pump means is utilized to equalize the instantaneous pressure drop through the probe with the instantaneous pressure drop through the exhaust duct.

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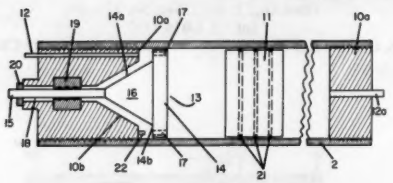
3,793,888

## CELL FOR COLLECTING AND MIXING FLUIDS

Gary W. Rosenwald, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Aug. 2, 1972, Ser. No. 277,442
Int. Cl. G01n *1/14*
U.S. Cl. 73—421 R 8 Claims




Apparatus for collecting a sample of fluid which includes a piston slidable in a cylinder and displacable by the sample. A mixing element is provided within the cylinder. The piston, mixing element and end wall of the cylinder are all so configured that virtually no dead space remains when the piston is slid toward the inlet end wall prior to a sample being taken.

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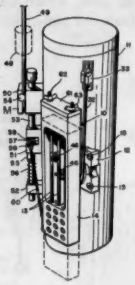
3,793,889

## THERMOMETER REVERSING APPARATUS

Shale J. Niskin, 5535 N. W. 7th Ave., Miami, Fla. 33127

Filed Feb. 7, 1973, Ser. No. 330,268
Int. Cl. G01n *1/10*
U.S. Cl. 73—425.4 R 5 Claims

A thermometer reversing apparatus having a case for containing thermometers therein rotatably and releasably secured to a rotatable ring member that is mounted on a mounting member which in turn is mounted on a water sampler bottle. A pair of bolts which are secured to the ring member have heads received by enlarged openings in the thermometer case which upon sliding into smaller communicating openings locks the case to the ring member by means of a retractable locking pin that is mounted on the ring member and is slid into an opening in the thermometer case. A rotatable stop member which maintains the thermometer case and the ring member in locked position by preventing the sliding of the locking pin out of the opening in the thermometer case may be rotated to permit release of the locking pin and the thermometer case to be removed from the rotatable ring member.



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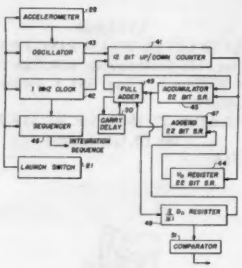
3,793,890

## DIGITAL ELECTRONIC INTEGRATING ACCELEROMETER

Matthew E. Anderson, Ontario, and Stephen L. Redmond, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1972, Ser. No. 255,746
Int. Cl. G01p *15/08*
U.S. Cl. 73—490 11 Claims



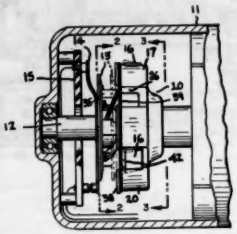

An acceleration signal is integrated over a determinable time period to develop a digital count which is a function of velocity; that signal is then again integrated over an identical time period to produce a digital count as a function of the distance traveled during the acceleration periods. The distance signal is compared to a reference signal to determine whether a missile, for example, undergoing the detected acceleration has traveled a sufficient distance from its launching site,or vehicle such as an aircraft, to be safely armed for detonation. A digital distance signal equal to the reference signal affects arming of the missile by aligning an explosive train, for example, for detonation. First and second interlocks in the system are responsive to a ready-to-launch signal and an initial minimum acceleration signal, respectively, to ready the system for arming. The final step of arming is accomplished by a cam driven into arming position by simultaneously actuated drive members which are pivotably attached to the arming cam. If only one of the two drive members is actuated by a spurious signal, for example, the cam is pivotably displaced and locked into a non-armed position.

3,793,891

## ROTARY CENTRIFUGAL SPEED-RESPONSIVE CONTROL DEVICE

Joseph Greenhut, 3333 Warrenville Center Rd., Shaker Heights, Ohio 44122

Filed Sept. 11, 1972, Ser. No. 287,755
Int. Cl. H01h *35/10*
U.S. Cl. 73—538 17 Claims



A control-actuating centrifugal speed-responsive device for mounting on the shaft or other rotatable member of the device whose speed is to be monitored or controlled. The device includes a disk-shaped conical spring, preferably of the snap-action type, which is loosely retained or supported in the body of the device so as to have knife-edge pivotal movement in its operative sequence. Circumferentially spaced weights are secured to the peripheral portion of the spring to actuate the spring in response to centrifugal forces and cause retraction of a control-engaging shoe which is operatively secured to the spring and normally projected or extended by the spring in the static position of the device to either engage or disengage from the control being actuated. Recesses are provided in the body of the device for containing the weights for the purpose of limiting excessive excursion of the weights resulting from the centrifugal forces to which they are subjected. A stabilizer member or plate is secured to the shoe in position to underlie the spring and provide a stabilizing support for the spring when the shoe is in its spring-urged projected position. The axial spacing between the shoe and the stabilizer member is predetermined to effect pretensioning of the spring when it is in the static position, so that increased stability of the spring is achieved and operating characteristics of the device can be established with greater precision.

3,793,892

## BELLOWS-TYPE DUST BOOT WITH EXPANDABLE SLEEVE

Hans-Peter Liebig, Bernhausen, and Gunter Umbach, Stuttgart, both of Germany, assignors to Westinghouse Bremsen-Und Apparatebau GmbH, Hannover, Germany

Filed Feb. 8, 1973, Ser. No. 330,584
Int. Cl. F16j *15/32*
U.S. Cl. 74—18.2 9 Claims

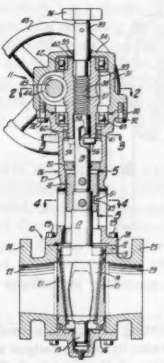
This invention relates to a bellows-type replaceable dust boot through which extends a brake rod of a tread brake assembly or a brake cylinder. One end of this bellows-type boot is secured in coaxial surrounding relation to a brake rod opening provided in the body of the brake assembly or cylinder by any suitable means. Since a clevis is carried at the exterior end of the brake or piston rod, in order to provide for sliding the other or smaller end of the dust boot over this clevis, the adjacent end of the bellows has integral therewith and extending therefrom a semi-split expandable sleeve for sealing engagement, when assembled and subsequent to the passing therethrough of the clevis, with the peripheral surface of the brake rod. This expandable sleeve comprises a pair of resilient semi-circular members the longitudinally extending adjacent edges of which are integrally connected by a resilient V-shaped foldable member. These V-shaped members are thus expandable to provide for the passage of the smaller end of the dust boot over the clevis. The thickness of one longitudinal edge of each semi-circular member is substantially less than the thickness of the remainder of the member to provide for receiving therein the corresponding resilient V-shaped foldable member which is retained therein by a suitable means such as, for example, a clamp in the form of a thin rectangular metallic strip disposed about the pair of semi-circular members with the opposite ends of this strip secured one to the other by any suitable means.

3,793,893

## VALVE ACTUATING MEANS

Irving J. Heinen, Lakewood, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed July 10, 1972, Ser. No. 270,339
Int. Cl. F16h *21/00*
U.S. Cl. 74—22 12 Claims



Actuating means for a valve, particularly of the plug type, which is movable between operative positions by successive modes of movement, one being axially and another rotationally, wherein a rotatably driven nut is in threaded engagement with a valve stem, a cam controlled device acting respectively at predetermined positions of the nut to permit relative movement of the nut so as to move the stem in the axial mode, and to connect the nut and stem for unitary rotation so as to move the stem in the rotational mode, guiding means being provided for the stem, so that it cannot be moved in a subsequent mode until the prior mode has first been completed.

3,793,894

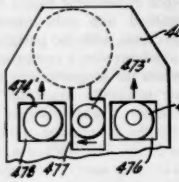
## MECHANICAL MECHANISM

Paul Greskovics, Manhattan Beach, Calif., assignor to Litton Business Systems, Inc., New York, N.Y.

Division of Ser. No. 50,063, June 26, 1970, Pat. No. 3,698,628.
This application Sept. 11, 1972, Ser. No. 270,601
Int. Cl. F16h *25/14*, *27/08*
U.S. Cl. 74—55 19 Claims

A cash register is provided with an accumulator and a display. On ADD cycles of the cash register, the accumulator is

moved in one direction to engage the digit tape by a pair of eccentrics, and on TOTAL cycles, it is moved in another direction by another eccentric to transfer digital information




to the display. Control of the eccentrics is provided by an axially movable timing gear which provides a modified geneva-type mechanical movement.

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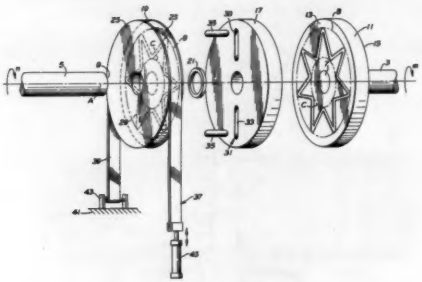
3,793,895

## POWER TRANSMITTING DEVICE

Herbert L. Wright, 190 N. Cleveland Ave., Mogadore, Ohio 44260

Filed May 18, 1973, Ser. No. 361,488
Int. Cl. F16h *21/12*
U.S. Cl. 74—63 17 Claims



A power transmitting device in a small compact unit that produces angular velocity of the output shaft as a function of the angular velocity of the input shaft comprising axially aligned input and output shafts, a drive disk mounted on the input shaft, a driven disk mounted on the output shaft adjacent to the drive disk, and a control disk loosely mounted on the output shaft adjacent the driven disk, a set of astroite-shaped grooves formed in the drive and control disks, means spanning the driven disk and riding in the astroite-shaped grooves in the control disk and driven disk to join them together and provide for smooth, uninterrupted power transmission.

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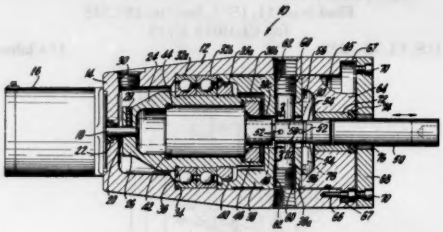
3,793,896

## INCREMENTAL LINEAR POSITIONING APPARATUS

Robert B. Price, Delanson, and Richard N. Hosterman, Elnora, both of N.Y., assignors to Numicon, Inc., Delanson, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,769
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 14 Claims

For use in the machine tool arts, an attachment is provided permitting the linear positioning in very small increments of either a workpiece or a machine element. A generally tubular outer housing supports a stepping motor having an output shaft that is coupled to an internally positioned motion changing device such as a ball-nut assembly. The rotary movement of the stepping motor is converted into small axial movements of the lead screw by the ball-nut assembly. Means within the housing constrain the output shaft of the ball-nut assembly to linear movement.



The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

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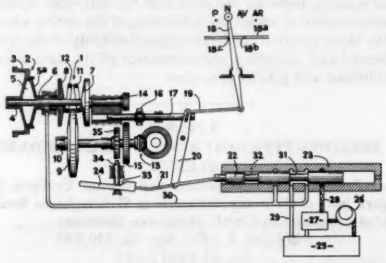
3,793,897

## TRANSMISSION ASSEMBLY IN PARTICULAR FOR A VEHICLE

Armand Froumajou, Pontoise, France, assignor to Automobile Peugeot, Paris and Regie National Des Usines Renault, Billancourt, both of, France

Filed Sept. 29, 1972, Ser. No. 293,565
Claims priority, application France, Nov. 15, 1971, 71.41289
Int. Cl. F16h *15/08*
U.S. Cl. 74—199 3 Claims



Transmission assembly comprising a coupling device, a friction speed variator including a hydraulic actuating device and an input shaft driven by the coupling device and an output shaft, two gears respectively integral with the input shaft and output shaft, motion-reversing gear means capable of engaging the two gears for reverse speed operation of the transmission assembly, and control means comprising valve means controlling the hydraulic actuating device and a manually-controlled selector lever for shifting the motion-reversing gear means and shifting the valve. The selector lever is capable of occupying at least three positions namely a neutral position, a forward speed position and reverse speed position and passes through an intermediate position between neutral position and reverse speed position in which intermediate position the valve brings the hydraulic actuating device into action.

3,793,898

## GEAR SHIFTING ASSEMBLY FOR CHANGE-SPEED TRANSMISSIONS

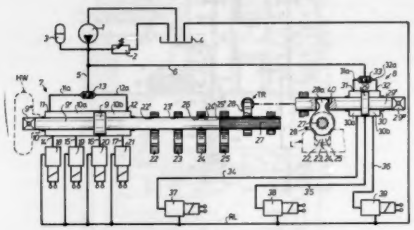
Helmut Espenschied, Ludwigsburg; Georg Rothfuss, Ditzingen, and Joseph Sauer, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 8, 1972, Ser. No. 250,956

Claims priority, application Germany, May 18, 1971, 2124624

Int. Cl. F16h 5/06, 3/08

U.S. Cl. 74—335 37 Claims



A gear shifting assembly for change-speed transmissions of the type having several shifting members which are actuatable to thereby set the transmission to a desired speed position employs two fluid-operated motors the first of which can move a displacing member into register with a selected shifting member and the second of which thereupon actuates the selected shifting member by way of the displacing member. The admission of a pressurized fluid to and the evacuation of fluid from the cylinders of the motors is regulated by a system of valves which are operated by pressurized fluid or by an electronic control unit.

3,793,899

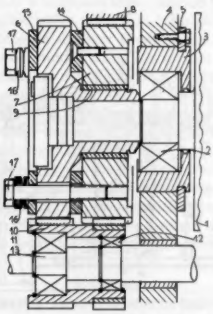
## APPARATUS FOR ANGULAR AND AXIAL REGULATION OF A PRINTING CYLINDER

Louis Bourbonnaud, Nantes, France, assignor to Societe Creusot-Hovie, Paris, France

Filed Sept. 11, 1972, Ser. No. 288,070

Int. Cl. F16h 35/06, 55/18

U.S. Cl. 74—397 5 Claims



A device for the angular and axial setting of a printing machine cylinder which is axially displaceable by a control means comprises a pair of coaxial cylindrical pinions whose teeth are set at different angles, one pinion being solid with the cylinder and the other pinion being freely mounted relative thereto, engaged by a pinion assembly of the machine and coupled to the one pinion by a sliding friction coupling, the two pinions being engaged by a freely axially adjustable double pinion which provides an angular control and a link with the axial control.

3,793,900

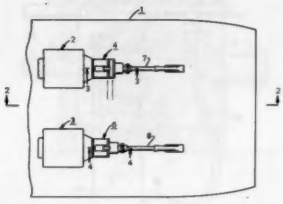
## MARINE PROPULSION UNIT

Carl I. Benson, Jr., Raynham, Mass., assignor to Paragon Gears, Incorporated, Taunton, Mass.

Filed Oct. 2, 1972, Ser. No. 294,288

Int. Cl. F16h 1/20, 57/02

U.S. Cl. 74—413 4 Claims



One of a pair of twin propeller drive shafts has an internal ring gear in mesh with a pinion on a first power shaft; and the other propeller drive shaft has a duplicate internal ring gear and is driven by means of a duplicate pinion which is secured to a second power shaft and axially spaced from said duplicate ring gear, and by means of a reverse idler having one gear section in mesh with the duplicate pinion and another gear section in mesh with the duplicate ring gear.

3,793,901

## SHIFTING MECHANISM FOR AUTOMATIC TRANSMISSIONS OF VEHICLES

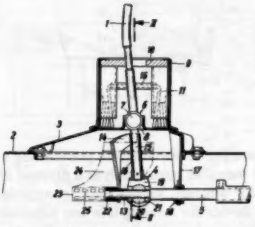
Robert Muller, Korntal, and Karl Sommerer, Stuttgart-Zuffenhausen, both of Germany, assignors to Dr. Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Oct. 13, 1971, Ser. No. 188,875

Claims priority, application Germany, Oct. 14, 1970, 2050395

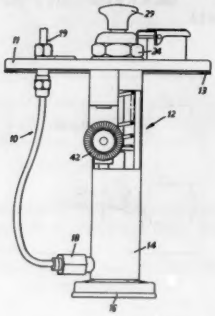
Int. Cl. G05g 9/12; F16h 57/06

U.S. Cl. 74—473 R 17 Claims



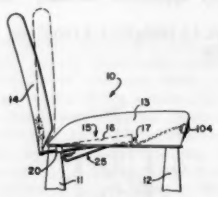
A shifting mechanism for automatic change-speed transmissions of vehicles in which an actuating lever is connected with a shifting linkage and serves for the selection of the individual drive speeds by the use of a template of essentially Y-shape, within which the actuating lever is guided; the park and reverse speed positions are thereby arranged on opposite sides of the remaining shifting positions for the forward drive and the neutral position arranged therebetween.

3,793,902
DRIVE ARRANGEMENT
Max Edward Grantham, Plympton, Plymouth Devon, England, assignor to Tecalemit (Engineering) Limited, Devon, England
Filed Oct. 18, 1972, Ser. No. 298,610
Claims priority, application Great Britain, Oct. 18, 1971, 48445/71
Int. Cl. F16h 21/18
U.S. Cl. 74—50 2 Claims



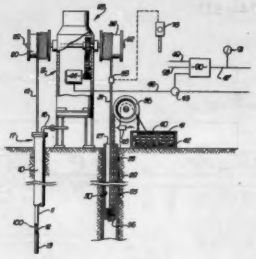
A drive arrangement for converting rotary motion to linear motion in which a rotating member co-operates with a co-operating member on a follower member, the follower moving along a line transverse to the axis of rotation of the rotating member and the co-operating member moving transversely both to the line and the axis of rotation.

3,793,903
MECHANISM FOR SEAT ADJUSTMENT
Ronald C. Pellman, Trumbull, Conn., assignor to American Standard Products, Inc., Hartford, Conn.
Filed June 13, 1972, Ser. No. 262,372
Int. Cl. A47c 1/02; B60m 1/06; G05g 5/22
U.S. Cl. 74—531 33 Claims



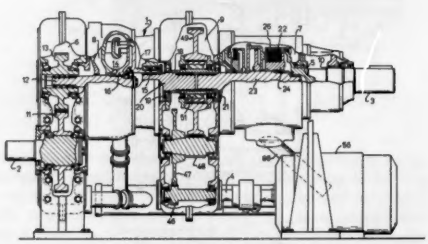
A mechanism for controlling the positioning and motion of two relatively movable parts, such as a pivoted chair back and a chair seat for aircraft, busses, etc., comprising a slide bar having a lock device for holding it in any adjusted position, the lock device being releasable by a manually actuated control. The lock device includes a one-way override, which enables the slide bar to be moved in response to a force applied by its connection to a seat back when the seat is urged towards upright position. A spring acts on the slide bar to move it and the seat to seat-upright position, and a pneumatic cylinder is connected to the slide bar to control its velocity, to avoid slapping the back of the seat's occupant by the seat back upon actuation of the control for the lock device. Adjustable limit stops are provided to determine the range of movement of the slide bar, and hence of the seat back. The mechanism is entirely mechanical, except for the noted pneumatic cylinder.

3,793,904
WELL PUMPING CONTROL
Donovan B. Grable, 2515 San Francisco Ave., Long Beach, Calif. 90806
Filed June 14, 1972, Ser. No. 262,605
Int. Cl. G05g 1/00
U.S. Cl. 74—590 15 Claims



A vertically reciprocable well pump is adjustably counterbalanced at the well head by adding metallic weights to a holder moving up and down, or removing weights from the holder. The pump may comprise a walking beam to which an adjustable counter-balancing assembly is connected at the side of the beam pivot opposite the hourshead; and the counterbalancing assembly may extend underground.

3,793,905
GAS TURBINE STARTING AND AUXILIARY TURNING MECHANISM
James B. Black, Roscoe, and Bradford K. Shull, Rockford, both of Ill., assignors to Twin Disc Incorporated, Racine, Wis.
Filed Aug. 14, 1972, Ser. No. 280,441
Int. Cl. F16h 37/06
U.S. Cl. 74—661 7 Claims



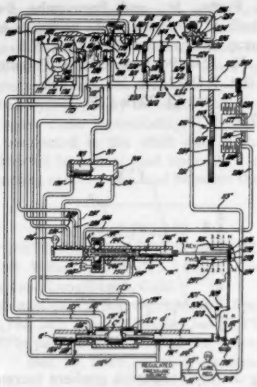
A double input-single output power transmitting mechanism is utilized to accelerate the rotor of a gas turbine from standstill to initial operating speed, and to continue rotation of the rotor at slow speed during cooling after fuel shut-off. A friction clutch transmits both the starting torque and the slow speed turning torque to the turbine rotor.

3,793,906

## MAIN AND BYPASS GEAR TRAIN TRANSMISSION

**Russell C. Williams, Pearce, Ariz., and Marion D. Smith, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Oct. 10, 1972, Ser. No. 295,966**
**Int. Cl. F16h** *3/02, 37/00, 37/06*
**U.S. Cl. 74—745** **11 Claims**



A multiratio transmission having a main gear unit having multiratio gearing selectively providing a plurality of forward ratio gearing drives to a primary output shaft and driving in bypass drive relation to the ratio gearing a secondary output shaft and bypass ratio drop box gearing connecting the primary output shaft by continuously meshing primary gearing to the final drive shaft to provide the main gear unit ratio drives and selectively connecting the secondary output shaft by secondary low ratio bypass gearing to the final drive shaft to provide lowest ratio forward drive. One modification has a main gear unit having a forward and reverse planetary gear unit having a forward and reverse secondary output shaft and a multiratio gear unit connected in series selectively providing a plurality of forward and reverse ratio drives to a main gear unit primary output shaft and a drop box gear unit having continuously meshing gearing connecting the primary output shaft to a final drive shaft to provide a plurality of forward and reverse ratio drives and selectively connecting said secondary output shaft which is in bypass drive relation to said multiratio gear unit through a lower reduction ratio gearing to the final drive shaft to provide a lower forward and a lower reverse ratio drive. Another modification has a main gear unit having a pair of input clutches driving a compounded planetary gear unit selectively providing a plurality of forward and a plurality of reverse ratio drives to a primary output shaft and a secondary output shaft and drop box gearing having continuously meshing gearing connecting the primary output shaft to a final drive shaft to provide the forward and reverse ratio drives provided by the main gear unit and selectively connecting the secondary output in bypass relation with the main gearing at a lower ratio to provide a lower ratio forward drive and providing with the main gearing a lower reverse drive.

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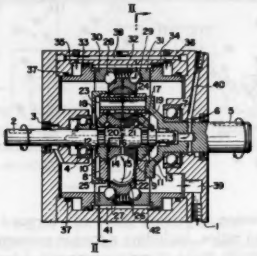
3,793,907

## TORQUE TRANSMISSION DEVICE

**Kenya Nakamura, Okazaki, and Nobuo Fukuma, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan**

**Filed Apr. 12, 1972, Ser. No. 243,379**
**Claims priority, application Japan, Apr. 19, 1971, 46/24478**
**Int. Cl. F16h** *13/06, 15/50, 15/26*
**U.S. Cl. 74—798** **9 Claims**

In a torque transmission device, an input shaft and an output shaft are disposed in axial alignment within a casing and combine with a pair of inner rings concentrically secured on the input shaft, an outer ring encircling the inner rings, and transmitting elements disposed between and in contact with the inner rings and the outer ring, to form a planetary mechanism. The transmitting elements are operatively engaged with the output shaft. By applying hydraulic pressure to the outer ring the frictional contact between the transmitting elements and the outer ring and inner rings can be varied. Therefore, a large rotating force can be transmitted at a reduced speed by the utilization of friction transmission. The inner rings are of the split type and are located on the input shaft between a pair of supporting plates. Notches are formed in the inner rings and the supporting plates and contain balls which facilitate the transmission of power between the input shaft and the transmitting elements. A servomechanism, located within the casing outwardly of the outer rings, provides the variation in the application of hydraulic pressure to the outer ring in accordance with the variation in speed or torque between the input and output shafts.



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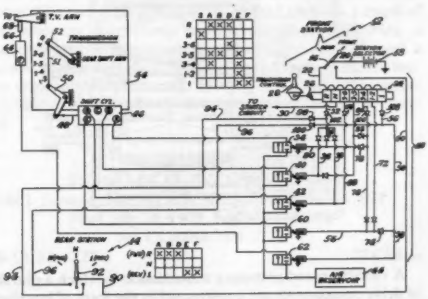
3,793,908

## ELECTRIC PNEUMATIC SHIFT CONTROL

**Robert G. Luft, Wildwood, and LeRoy G. Halvorson, Ingleside, both of Ill., assignors to International Harvester Company, Chicago, Ill.**

**Filed Apr. 13, 1972, Ser. No. 243,722**
**Int. Cl. B60k** *21/00*
**U.S. Cl. 74—870** **7 Claims**



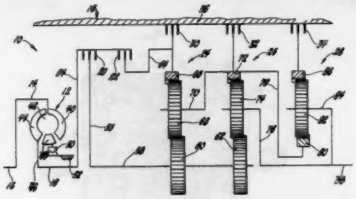
A means for controlling a transmission from either one of a pair of operator stations. A multi-position cylinder conditions the transmission for a given direction of travel and speed range. Air pressure is directed to various chambers within the cylinder to achieve the desired position by a plurality of solenoid-operated valves. The valves are selectively energized by a circuit means, including a switch means located in each of the operator stations. A selector switch in one station selectively connects one of the switch means with a source of electrical energy.

3,793,909

## TRANSMISSION

Stanley W. Herman, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 883,203, Dec. 8, 1969, abandoned.
This application Oct. 8, 1971, Ser. No. 187,816
Int. Cl. F16h 3/44, 57/10
U.S. Cl. 74—759 5 Claims



A transmission providing three (3) forward and two (2) reverse speed ratios, including a torque converter unit, input and output shafts, three planetary gear sets, a brake operatively connected to the ring gear of each gear set, interconnecting carriers and connector members, and a pair of disc-type clutches, the driving discs of both clutches being actuated by the torque converter output, with the driven discs of one clutch being connected to an input shaft on which the sun gears of two of the gear sets are mounted, and the driven discs of the other clutch being connected to the ring gear of one of the two aforementioned gear sets, the various speed ratios being determined by selective engagement of the brakes and clutches.

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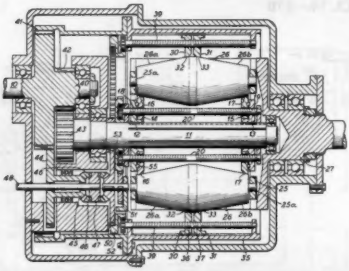
3,793,910

## VARIABLE SPEED FRICTION DRIVE

Algirdas L. Nasvytis, 10823 Magnolia, Cleveland, Ohio 44106

Filed Oct. 2, 1972, Ser. No. 294,016
Int. Cl. F16h 15/50, 37/06
U.S. Cl. 74—796 9 Claims



A variable speed planetary transmission in which a plurality of drive components are constructed in the form of interfaced conical friction members mounted for rotation about parallel axes and axially and radially relatively manipulatable to provide variable ratio gearing members. A preferred embodiment embodies planet rollers of a double conical configuration in rolling contact with mating rollers of reverse conical configuration and in which axial control means are provided for manipulating the axial positions of the cooperating conical members to provide a variable speed connection between sun and ring gear members. A further embodiment of the invention provides a differential variable speed drive wherein multiconical epicyclic transmission elements are employed to provide a varying output smoothly infinitely adjustable from a high forward speed downwardly through zero output to reverse speed, all without requiring a variation in the speed of rotation to the input shaft of the transmission.

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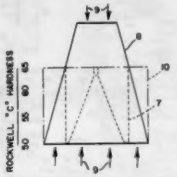
3,793,911

## EXTRUSION DIE AND METHOD FOR MAKING THE SAME

Francis Joseph Fuchs, Jr., and Peruvemba Swaminatha Venkatesan, both of Princeton, N.J., assignors to Western Electric Company Incorporated, New York, N.Y.

Division of Ser. No. 150,496, June 7, 1971. This application Oct. 2, 1972, Ser. No. 293,886
Int. Cl. B21k 5/20
U.S. Cl. 76—107 R 5 Claims




Rod-extruding die has toughness gradient increasing from the throat end to entrance end, and hardness or compressive strength gradient increasing from entrance end to throat end. Die may be cut (1) from non-uniformly work-hardened billet, (2) from non-uniformly-quenched heat-treatable billet, (3) from sintered billet produced by cofiring plural layers of sinterable powders having different post-sintering characteristics of toughness and hardness and arranged to provide toughness and hardness gradient in billet, (4) from billet produced by brazing plural elements having different characteristics of toughness and hardness and arranged to provide toughness and hardness gradient in billet. Die may also be formed by molding and compacting plural layers of sinterable powder material having different post-sintering toughness and compressive strength characteristics, in the form of the die, and cosintering to produce the die, the layers being arranged to provide a toughness and a hardness gradient in the die.

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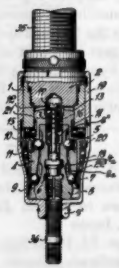
3,793,912

## STUD DRIVER

Otto Bilz, Vogelsangstr. 8, Nellingen, Germany

Filed July 8, 1971, Ser. No. 160,605
Claims priority, application Germany, Aug. 12, 1970, 7030226
Int. Cl. B25b 19/00
U.S. Cl. 81—52.3 22 Claims



A stud driver of a collet type in which the internally threaded front ends of the collet jaws are already in a substan-

tially closed position when one end of a stud, the other end of which is held in a nonrotating position, is inserted between the jaws by being automatically screwed therein for a certain distance by the rotation of the collet, whereupon the stud will be rotated by the collet for screwing its other end into a workpiece. When this other end has been screwed for a certain distance into the workpiece, the forward movement of the rotating collet shaft is stopped by a stop on the machine, and the collet jaws although further rotated by the shaft are separated from the latter insofar as the stud, while being further screwed for a certain distance into the workpiece, will draw the jaws out of a coupling on the shaft so that the further rotation of the jaws and thus also the screwing of the stud into the workpiece will then be immediately stopped. When the collet is then withdrawn by the shaft from the stud, the collet jaws will again close immediately. They will then again be rotatably connected to the shaft due to the axial pressure which is exerted by a new stud upon the closed ends of the jaws for starting to screw this stud between the jaws.

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**3,793,913**

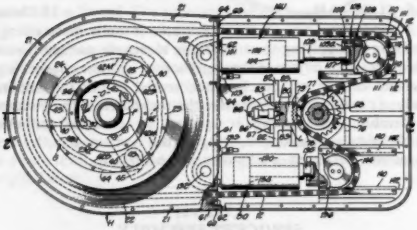
## REVERSE STOP FOR POWER TONGS

**Carl Alfred Wilms, La Habra, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.**

**Continuation-in-part of Ser. No. 134,661, April 16, 1971, Pat. No. 3,706,243. This application Jan. 7, 1972, Ser. No. 216,085The portion of the term of this patent subsequent to Dec. 19, 1989, has been disclaimed.**

**Int. Cl. B25b** *17/00*

**U.S. Cl. 81—57.18** **3 Claims**



A power tong for making up and breaking out pipe joints, in which pipe gripping jaws are actuated to pipe gripping positions from retracted positions responsive to relative rotation in either direction between a jaw carrying member and an actuator member, and the jaws are retracted upon reverse relative rotation in the opposite direction and reverse stop means are provided to prevent reverse relative rotation of said members past the positions at which the jaws are retracted. The reverse stop means includes alternately postionable stops carried by one of the members engageable with alternately spaced stops on the other member to limit reverse relative rotation.

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**3,793,914**

## VISE GRIP PLIERS

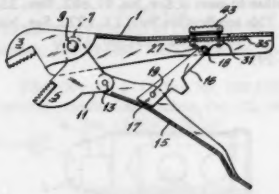
**Hosea W. Helms, 7750 Bartold Apt. 87, Maplewood, Mo. 63143**

**Filed June 14, 1972, Ser. No. 262,789**

**Int. Cl. B26b** *7/12*

**U.S. Cl. 81—378** **10 Claims**

Vise grip pliers are provided with an improved quick-action adjustment for the operating handle fulcrum bar, consisting of a transversely serrated rack on an inner surface of the jaw handle member, a mating serrated block pivotally connected to the end of the fulcrum bar and movable lengthwise of the serrated bar, a control tab on the outside of the handle member rigidly connected through the handle member to the serrated block, and a spring biasing the control tab and the serrated block outwardly, the latter into position-fixing engagement with the serrated bar, disengagement for movement lengthwise of the bar being effected by thumb pressure on the



tab and sliding it lengthwise of the handle to a selected position. A fine adjustment is provided by movably mounting the rack on the handle member and controlling the movement of the rack with an eccentric cam.

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**3,793,915**

## FILM CUTTING APPARATUS

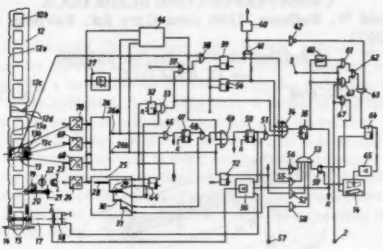
**Friedrich Hujer, Grunwald, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**

**Filed Sept. 28, 1971, Ser. No. 184,497**

**Claims priority, application Germany, Sept. 30, 1970, 2048094**

**Int. Cl. B26d** *5/24*

**U.S. Cl. 83—62** **28 Claims**



Film has first markings indicating properly exposed negatives and second markings indicating glued sections. Length of film following a previous cut is measured; following a predetermined length, passage of next first marking past a scanner causes activation of cutting means along frame line. Film transport then restarted. Sensing of second marking also initiates cutting along frame line, but no subsequent film transport.

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**3,793,916**

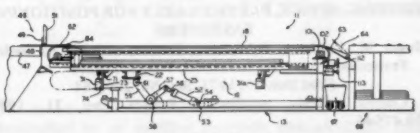
## FEEDBACK CONVEYOR SYSTEM

**David J. Jarman, Box 181 R.R. No. 3, Aurora, Ind. 47001**

**Filed July 26, 1972, Ser. No. 275,316**

**Int. Cl. B26d** *7/06, 7/16*

**U.S. Cl. 83—155** **22 Claims**



Material handling conveyor systems for use in cooperation with shear equipment. The conveyor system can be controlled to feedback or return sheared portions of the plates to the shear operator for further shearing operations.

3,793,917

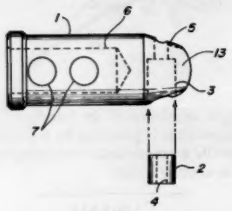
## ROTARY FILAMENT CUTTER

Thomas A. Flower, 109 Lakeview Ave., Colonial Heights, Va. 23834, and Noel York Rothmayer, 2 Spring Garden Dr., Madison, N.J. 07940

Continuation-in-part of Ser. No. 91,802, Nov. 23, 1970, abandoned. This application Nov. 13, 1972, Ser. No. 306,226

Int. Cl. B23d *31/00, 35/00*

U.S. Cl. 83—199 1 Claim



A rotary filament cutter is disclosed having a rotating cylindrical cutting element within a stationary cylindrical cutting housing. These two elements, in conjunction with driving means, cut filaments moving in any type of filament string-up process.

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3,793,918

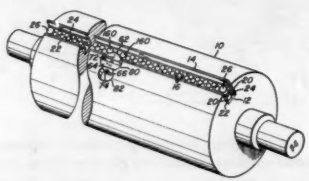
## CROSS PERFORATING BLADE LOCK

Harold W. Huffman, 2100 John Gary Rd., Fairfield, Ohio 45011

Filed Oct. 12, 1971, Ser. No. 188,080

Int. Cl. B26d *1/12*

U.S. Cl. 83—698 38 Claims



The perforating or cutting blade of the blade cylinder of a press, collator, or similar machine, is locked in a blade channel by means of a multiplicity of clamp members in the form of floating rollers which, by means of a single clamp actuator, are caused to impinge at a plurality of locations along the length of the blade for quickly, accurately, and uniformly clamping the blade in locked, operative position within the blade channel.

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3,793,919

## CUTTING DEVICE, PARTICULARLY FOR POSITIONING FASTENERS

Roger M. Lefebvre, Saint-Ame, France, assignor to Societe Francaise D'Agrafage Industriel, Vosges, France

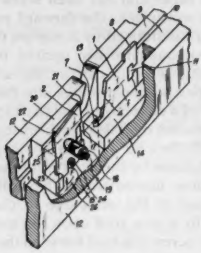
Filed Dec. 17, 1971, Ser. No. 209,084

Claims priority, application France, Dec. 31, 1970, 70.47546

Int. Cl. B23d *35/00*

U.S. Cl. 83—583 4 Claims

A cutting device for use in a fastener handling machine. The device comprises a cutter blade and a counter blade each having respective cutting surfaces which interact when the cutter blade is moved towards the counter blade to produce a shearing action. The counter blade is spring urged against a fixed support and is movable laterally with respect to the direction of movement of the cutter blade and against the spring force by an inclined face on the cutter whereby the cutting edge of the counter blade is guided across the cutting edge of the cutter blade to produce a shearing action.



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3,793,920

## PROCESS FOR MAKING A CONDUCTIVE-MIX ELECTRICAL INITIATOR

Carl P. Sheran, Bloomingdale, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1972, Ser. No. 307,002

Int. Cl. C06b *21/02*

U.S. Cl. 86—1 R 15 Claims

A conductive-mix electrical initiator is made more energy-sensitive by applying to at least one electrode surface therein which is to be adjacent the conductive ignition charge, e.g., the end surface of the electrode seated within the initiator body, a coating which increases the resistance of the initiator. Preferably, the coating is applied by chemical or electrochemical conversion coating of the surface, e.g., by acid chromate treatment or a light anodic oxidation.

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3,793,921

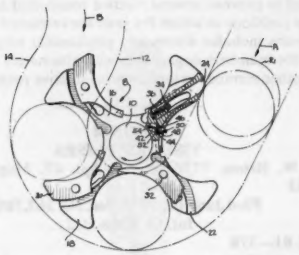
## SPROCKET ASSEMBLY

Otto H. Meier, Shelburne, and Douglas P. Tassie, St. George, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Oct. 12, 1972, Ser. No. 296,799

Int. Cl. F41d *9/02*

U.S. Cl. 89—33 CA 16 Claims

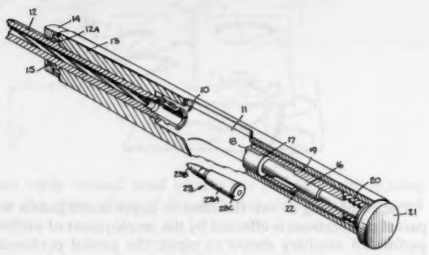


A sprocket assembly has a sliding cusp on each tooth to increase and decrease the spacing between adjacent teeth. The position of the cusp is controlled by the round and the angular orientation of the tooth.

## 3,793,922
## COLLET-CHAMBER RETARDING SYSTEM FOR WEAPONS

Robert H. Angell, 514 E. 88th St., New York, N.Y. 10028, and Robert S. Frielich, 396 Broome St., New York, N.Y. 10013

Filed Jan. 22, 1973, Ser. No. 325,306
Int. Cl. F41d 3/00; F41c 21/12; F41f 17/00
U.S. Cl. 89—180 9 Claims

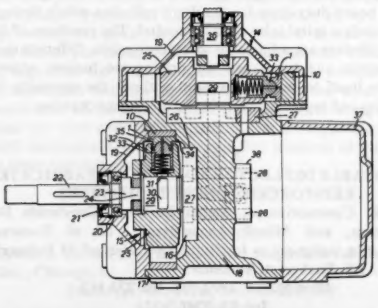


A weapon whose barrel terminates in cartridge-receiving chamber which, in the firing state, is surrounded by the sleeve of a breech-closing mechanism. The chamber is longitudinally slotted to define a set of flexible fingers extending rearwardly from an unslotted forward section. When the cartridge is fired, the resultant high gas pressure therein causes momentary dilation of the casing, which then presses outwardly against the forward section of the chamber and the set of fingers in the rear section threof. The pressure exerted by the casing against the forward section of the chamber produces a gas seal preventing the escape of gas into the breech of the weapon, while the pressure exerted against the set of fingers causes deflection thereof, whereby the fingers or clips associated therewith frictionally engage the inner surface of the surrounding sleeve to lock the breech-closing mechanism and to retard the release thereof until the gas pressure has diminished to a safe level, permitting the casing to contract to assume its original state.

## 3,793,923
## RADIAL PISTON HYDRAULIC MACHINES

John Cambridge Smith, Cheltenham, Great Britain, assignor to Hydro-Mite Limited, Gloucestershire, Great Britain

Filed Dec. 3, 1971, Ser. No. 204,643
Claims priority, application Great Britain, Dec. 5, 1970, 57878/70
Int. Cl. F01b 13/06
U.S. Cl. 91—488 4 Claims

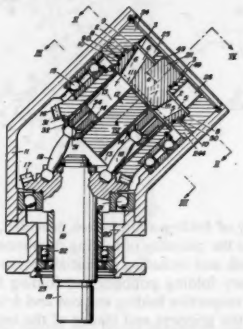


A slipper and cam track for a radial piston hydraulic machine have engaging generally part-cylindrical and cylindrical surfaces respectively. The engaging slipper surface is relieved over its central area to give clearance between itself and the cam track, either by being of greater radius of curvature than the cam track or having a flat. The slipper bearing surface is also formed with oil pressure and relief grooving.

## 3,793,924
## FLUID-TRAVERSED FLOW PISTON UNIT

Karl Eickmann, 2420 Isshiki Hayama-machi, Kanagawa-ken, Japan

Filed Oct. 15, 1971, Ser. No. 189,598
Claims priority, application Austria, Oct. 22, 1970, 1954/70
Int. Cl. F01b 13/04
U.S. Cl. 91—487 3 Claims

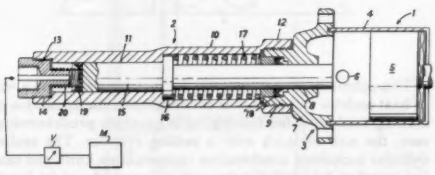


Fluid-traversed flow piston unit, having a housing and pistons for moving in cylinders of an axially mounted rotor and having a control body for controlling the induction with fluid of the cylinders. A coupling body is mounted in a recess of the housing or of a housing part for axial movement. The coupling body is provided with shoulders and at least one eccentric extension so that at least one radial eccentrically extending fluid pressure chamber is formed between the shoulders and a wall of the recess of the housing. In this manner the fluid in the fluid pressure chamber presses the coupling body against the rotor.

## 3,793,925
## FLUID PRESSURE-OPERATED PISTON/CYLINDER UNITS

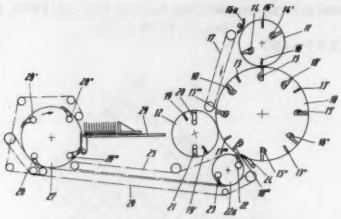
Stanley Collin, Fleckney, England, assignor to Livingston and Doughty Limited, Leicestershire, England

Filed June 15, 1972, Ser. No. 262,968
Claims priority, application Great Britain, June 15, 1971, 27906/71
Int. Cl. F01b 31/14; F15b 15/24
U.S. Cl. 92—13.1 3 Claims



The stroke of the piston of a pneumatic piston/cylinder unit is controlled by an auxiliary hydraulic piston/cylinder unit fitted to the base end of the main unit. Auxiliary piston is projected into main cylinder under static hydraulic pressure so that base position of main piston is determined by abutment with auxiliary piston. Adjustment of static pressure varies base position and hence stroke of main piston.

3,793,926
**APPARATUS FOR FOLDING OF ENVELOPE BLANKS**
Karl-Heinz Honsel, Heidelberger Weg 15, Bielefeld, Germany
Filed Feb. 22, 1972, Ser. No. 228,398
Claims priority, application Germany, Feb. 23, 1971, 2108484
Int. Cl. B31b 21/00
U.S. Cl. 93—62 13 Claims



A plurality of folding stations are provided, corresponding in number to the plurality of folding operations to be carried out on a blank and including an initial station and a terminal station. Rotary folding grippers and folding blades are provided on the respective folding stations and drive means serves for rotating the grippers and blades of the initial folding station so as to effect folding of a blank in one direction, and the grippers and blades of all other folding stations so as to effect folding of the blank in an opposite direction. Removing devices remove folded blanks from the terminal folding station.

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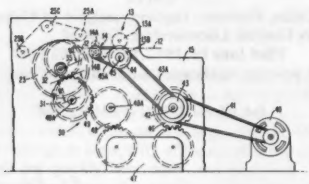
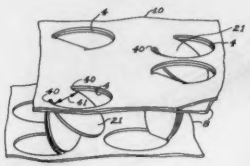
3,793,927
**BAG MAKING MACHINE**
Albert Emond, 41 Windward Dr., Newburgh, N.Y. 12550
Filed May 18, 1972, Ser. No. 254,758
Int. Cl. B31b 1/16, 1/64
U.S. Cl. 93—33 H 35 Claims



This patent discloses apparatus for forming bags from a web of heat sealable stock, such as thermoplastic, the apparatus including feed rolls for feeding, at a constant predetermined rate, the web of stock over a sealing cylinder. The sealing cylinder includes a combination reciprocating knife and sealing member for severing the web transversely of its length while sealing areas of the plys along both of the severed edges. By driving the sealing cylinder with eliptical gears and at the proper timed relation, the velocity of the web across the cylinder is reduced, relative to the web feed, during engagement of the web with the sealing and severing knife, the rotation of the cylinder being faster during the remaining portion of one revolution in which the sealing cylinder is not effecting a seal or severance of the web.

3,793,928
**PAPER BOARD CONNECTING METHOD**
William A. Wootten, 425 Via Carta, Palos Verdes Estates, Calif. 90274
Filed Sept. 7, 1971, Ser. No. 178,183
Int. Cl. B31f 5/02
U.S. Cl. 93—1.1 12 Claims



The combining of two flat fiber or paper board panels with partial perforations is effected by the employment of similarly perforated auxiliary sheets or tapes, the partial perforation areas or tabs of which are deflected or bent into the perforations of two or more panels to make a connection between them.

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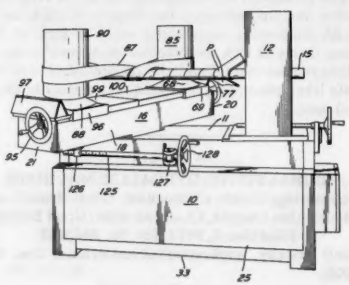
3,793,929
**SPIRAL TUBE WINDING MACHINE**
Joseph Snyderman, Philadelphia, Pa., assignor to John Eppler Machine Works, Inc., Philadelphia, Pa.
Filed Sept. 12, 1972, Ser. No. 288,370
Int. Cl. B31c 3/00
U.S. Cl. 93—80 7 Claims



A spiral tube winding machine is disclosed having an improved heavy duty drive for the drum cylinders which through a belt winds a spiral tube onto a mandrel. The positions of the drum cylinders are adjustable to accommodate different sizes of mandrels and tubes and the driving mechanism accommodates itself to such adjustment without the necessity for removing and replacing gears in the driving mechanism.

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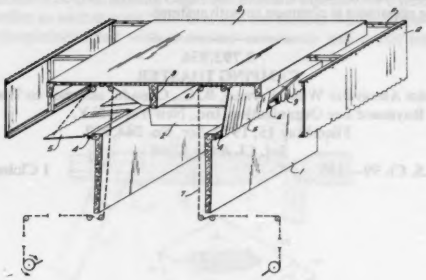
3,793,930
**ADJUSTABLE DEFLECTOR MADE OF PREFABRICATED REINFORCED CONCRETE MEMBERS**
Petre B. Constantinescu; Stefan Barthon; Constantin Dumitrescu, and Mihail Alexandrescu, all of Bucarest, Romania, assignors to Institutul de Proiectari Al Industriei USOARE, Bucharest, Romania
Filed Mar. 9, 1972, Ser. No. 233,163
Int. Cl. F24f 7/02
U.S. Cl. 98—42 3 Claims

A vent for an industrial building has a support structure case from reinforced concrete and having a pair of vertical beams

provided with swingable covers along the upper edges thereof. A deflector plate is spaced above the beams and overhangs the



latter while vertical wind screens are provided with spacing from the outer edges of the deflector slab and are secured thereto.

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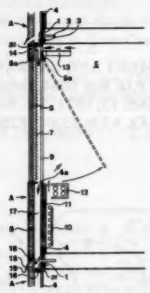
**3,793,931**
**WINDOW FACADE ELEMENT**
**Ernst Wild, Im Gehren 8712, Stafa, Switzerland**
**Filed Aug. 21, 1972, Ser. No. 282,549**
**Claims priority, application Switzerland, Aug. 30, 1971, 12673/71**
**Int. Cl. E06b *7/02***
**U.S. Cl. 98—95** **8 Claims**



A window facade element for a building equipped with an overpressure aeration or air climatizing installation, comprising an outside facade component and an inside facade component arranged in spaced relationship from one another. Both components extend over the entire surface of the window facade element and each has a respective window opening covered with glass. An air compartment is formed between both facade components which contains a shutter element at the region of the window openings and such compartment communicates with an air inlet opening at the inner component and an air outlet opening at the outer component. These air inlet and outlet openings are arranged along opposite horizontally extending boundary portions or edges of the inner and outer components.

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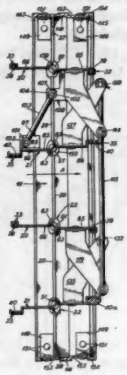
**3,793,932**
**AIR DAMPER**
**Sherwin S. Tarnoff, Northbrook, Ill., assignor to Air Balance, Inc., Chicago, Ill.**
**Filed Mar. 30, 1972, Ser. No. 239,659**
**Int. Cl. F24f *13/00***
**U.S. Cl. 98—110** **10 Claims**

An air damper is formed with first and second sets of extruded aluminum blades pivotally mounted in a frame formed of extruded aluminum frame members with longitudinally extending channel means of different widths along the longitudinal edges of the respective blades. The different width channel means nest in a sealing relationship with one another and seal with the frame when the blades pivot to a closed position from an open position. The method of manufacture of the air damper includes the steps of severing predetermined lengths of blades and frame members from long aluminum extrusions



preshaped for the blades and frame members, partially erecting a frame from frame members, alternating and pivotally mounting the first and second blades in the partial frame, completing the frame, and interconnecting the first and second blades with a linkage means to close the narrower width channel means first with the frame and then to follow and close thereon the wider width channel means to provide the nested sealing relationship between the blades of the first and second sets.

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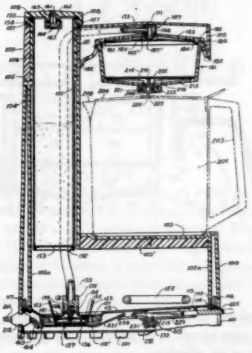
**3,793,933**
**COFFEE INFUSION APPARATUS AND METHOD**
**Robert L. Weber, 49 Clapboard Rd., New Canaan, Conn. 06840**
**Filed Nov. 19, 1971, Ser. No. 200,300**
**Int. Cl. A47j *31/24***
**U.S. Cl. 99—283** **5 Claims**



A coffee infusor consisting of a self-contained appliance providing for filtering water to purify and condition it before or after heating, heating it in a closed container to generate

pressure to move it, controlled communication from the closed heating chamber to a coffee infusion chamber for timed infusion, where the heated water is contacted with coffee grounds and passed from the infusion chamber to a receptacle to collect the finished coffee infusion.

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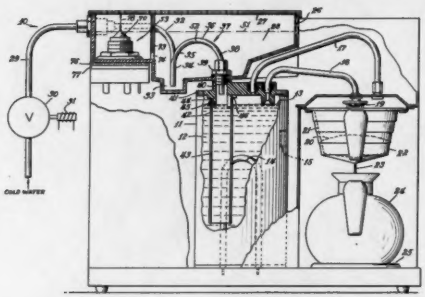
**3,793,934**
**AUTOMATIC COFFEE MAKER WITH LIQUID LEVEL SENSOR AND SIPHON CONTROL**
**John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.**
**Filed Dec. 15, 1972, Ser. No. 315,409**
**Int. Cl. A23f** *1/08*
**U.S. Cl. 99—282** **19 Claims**



Cold water is supplied to a basin until it reaches a liquid level sensor and then is siphoned from the basin into a hot water tank from which hot water is siphoned for coffee brewing purposes. Various cold water siphon arrangements are provided together with various means for varying the volume of cold water supplied to the basin.

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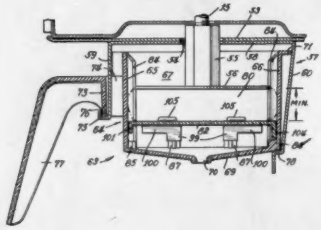
**3,793,935**
**COFFEE MAKING MACHINE CONVERTIBLE BETWEEN FUNNEL-FILTER OPERATION AND POUCH PACK OPERATION**
**John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.**
**Filed May 11, 1972, Ser. No. 252,269**
**Int. Cl. A47j** *31/00, 31/34*
**U.S. Cl. 99—295** **7 Claims**



Coffee making machine can be used with a ground coffee funnel-filter combination or a funnel-pouch pack combination on provision of an adapter.

When used in the funnel-pouch pack mode a spray head assembly bears against a ground coffee pouch positionable at different levels in a funnel to force hot water through the pouch for maximum brewing efficiency. A valve in the air vent line is closed when the cold water supply valve is opened to force the hot water to flow through the ground coffee pouch. Except for the ground coffee receiving apparatus, the spray head and the valve in the air vent line, essentially the remaining apparatus is common to both systems.

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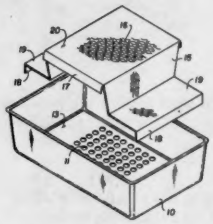
**3,793,936**
**CAMPING TOASTER**
**John Alexander Wills, Vernon, B. C., Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.**
**Filed May 15, 1972, Ser. No. 244,967**
**Int. Cl. A47j** *37/08*
**U.S. Cl. 99—339** **1 Claim**



A device for cooking toast over a gas burner or flame consisting of a rectangular pan with holes in the bottom, and a wire screen member for holding the bread, said wire screen resting on the top of the sides of pan, in the area directly above the pan holes.

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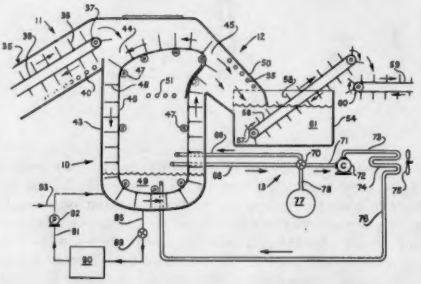
**3,793,937**
**LIQUID TREATMENT AND EXTRACTION APPARATUS**
**Samuel P. Lipoma, P.O. Box 1064, Delano, Calif. 93215**
**Filed Oct. 13, 1971, Ser. No. 188,857**
**Int. Cl. A23n** *15/00;* **F25d** *17/02*
**U.S. Cl. 99—355** **7 Claims**



Apparatus and method for treating food and other products with volatile fluorocarbons employing liquid seals to prevent loss of fluorocarbon vapor.

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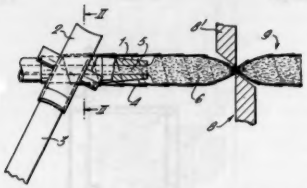
**3,793,938**
**APPARATUS FOR PRODUCING TUBULAR WAFFLE SHAPES**
**Franz Haas, 25-A1210 Gerstlgasse, Vienna, Austria**
**Filed Dec. 13, 1971, Ser. No. 207,475**
**Claims priority, application Austria, Dec. 17, 1970, 11367/70; June 14, 1971, 5104/71**
**Int. Cl. A21c** *9/06;* **B65h** *54/02*
**U.S. Cl. 99—450.6** **7 Claims**

An apparatus for producing tubular waffle shapes from a strip of waffle material wound helically on a mandrel in

edgewise overlapping relationship, and contacted by steam before overlapping to adhesively bind the adjacent convolutions. The overlapping edges are pressed together by a guide roller to assure good adhesion and the tubular waffle shape is completely filled with a creamy substance and is cut into



predetermined lengths before hardening. The guide roller is mounted to feed the strip obliquely on the winding mandrel and also exerts pressure against the overlapping edges of adjacent convolutions and advances the wound body on the mandrel.

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**3,793,939**

**INSTALLATION FOR STERILIZING PACKAGES FILLED WITH MATERIALS, ESPECIALLY FOODSTUFFS OR SEMI-LUXURIES**

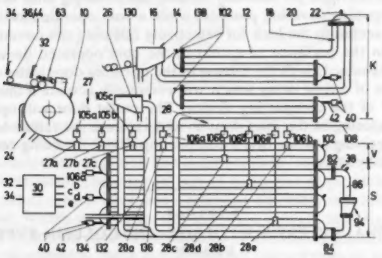
**Werner Wieser, Kreuzlingen, and Emil Munz, Bottighofen, both of Switzerland, assignors to Hero Conserven Lenzburg, Lenzburg, Switzerland**

**Filed Oct. 21, 1971, Ser. No. 191,239**

**Claims priority, application Switzerland, Sept. 28, 1971, 14093/71**

**Int. Cl. A23l** *3/08*; **B65b** *55/22, 61/28*

**U.S. Cl. 99—483** **49 Claims**



An installation for the sterilization of packages filled with materials, especially with foodstuffs or semi-luxuries, wherein such installation is equipped with a conveying channel which extends between an inlet sluice and a free outlet, this conveying channel possessing a pre-heating zone, a sterilization zone and a cooling zone. The packages are transported through the conveying channel solely by means of a throughflowing fluid medium serving as an energy transmission agent. The conveying channel extends through such a tortuous or twisted path and through such elevational positions that the pressure at the sterilization zone is greater than at the pre-heating zone and cooling zone. The pre-heating zone and the sterilization zone collectively possess their own heatable fluid medium circulation system which is separated by a pressure sluice from the fluid medium circulation system of the cooling zone.

**3,793,940**

**APPARATUS FOR COOKING FOOD IN HOT NON-AQUEOUS LIQUIDS UNDER PRESSURE**

**Charles Jere Albright, 919 N. Michigan Ave., Chicago, Ill. 60610; Clifford E. Fitch, Sr., and Clifford Fitch, Jr., both of P.O. Box 221, South Holland, Ill. 60473**

**Filed Dec. 1, 1969, Ser. No. 881,230**

**Int. Cl. A47j** *37/12*

**U.S. Cl. 99—408** **23 Claims**

The essential concept of this invention basically involves the improved structuring and operative arrangement of a multiple-receptacle apparatus for the pressurized cooking of food in hot, non-aqueous liquid, wherein the food is inserted into and removed from a receptacle cooking compartment when it is essentially drained of the hot liquid and free of pressure.

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**3,793,941**

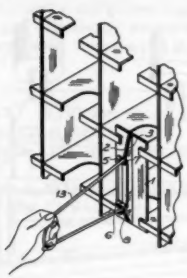
**DEVICE FOR AIDING IN THE BUNDLING OF MAIL**

**Herbert J. Potts, 5967 W. 215th St., Fairview Park, Ohio 44126, and Godfrey L. Larson, 6514 W. 83rd St., Shawnee Mission, Kans. 66204**

**Filed Dec. 8, 1971, Ser. No. 205,954**

**Int. Cl. B65b** *13/00*

**U.S. Cl. 100—1** **12 Claims**



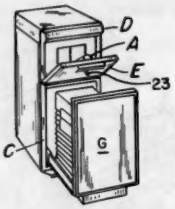
A device for aiding in the bundling of mail having a base portion which may be applied to a support that may be part of a mail sorting case or a wall adjacent thereto. The device includes a base or foundation material having outwardly extending parts on which is formed a plurality of spaced rounded portions to which an elastic band may be applied. Preferably, the device has two pairs of such rounded portions so that the device may be utilized either by a right or left handed postal clerk. In practice, the elastic band is pulled outwardly with one hand and a bundle of mail is inserted in the expanded band with the other hand. The band is then released to permit it to contract around the package of mail. The elastic band may be removed from the device by a slight twist of the bundle of mail. When the sorting case is used as a support, the device may be easily applied thereto and released therefrom.

3,793,942

## SPRAY ACTUATOR FOR REFUSE COMPACTOR

Leonard J. Martiniak, Waukesha, and Marlin L. Race, Elm Grove, both of Wis., assignors to General Electric Company, Louisville, Ky.

Filed July 25, 1972, Ser. No. 275,092
Int. Cl. B30b *15/30*
U.S. Cl. 100—73 9 Claims




Manual operating means is controlled externally and is used to open the flow control or spray valve of a deodorant or disinfectant containing aerosol container that is carried within an upper access chamber of a refuse compactor. The container may be mounted on the inside of a swingable access door that opens through a front wall of the compactor above upper reaches of a refuse compartment or on a wall member within the access compartment. The manual actuating means has an outside mounting for operation from or adjacent to the door.

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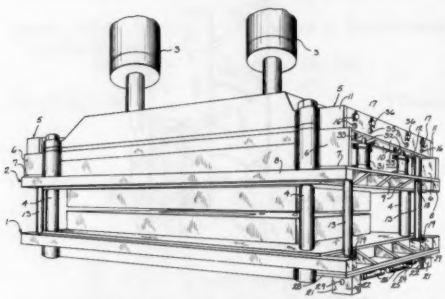
3,793,943

## HYDRAULIC PRESS

Elmer E. Olson, Nashotah, Wis., assignor to G. B. Lewis Company, Watertown, Wis.

Filed Aug. 10, 1972, Ser. No. 279,462
Int. Cl. B30b *1/32*
U.S. Cl. 100—269 R 13 Claims



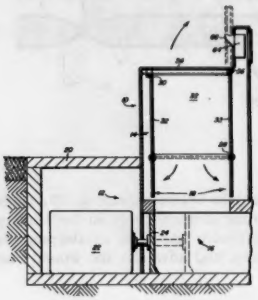
An apparatus for increasing the force exerted by a hydraulic press. A pair of headers are mounted on the upper platen of the press and rods extend downwardly from each header and carry blocks that are adapted to be received within pockets in the lower platen. When the upper platen is lowered toward the lower platen and the cooperating dies carried by the platens engage the workpiece, the blocks are automatically locked within the pockets to integrally connect the headers to the lower platen. Auxilliary cylinders mounted on the upper platen exert an upward force against the headers forcing the headers upwardly and thereby increasing the force applied to the workpiece.

3,793,944

## COIN OPERATED REFUSE COMPACTOR SYSTEM

Allan M. Grubich, Star Rt. C, Box 24, Camdenton, Mo. 65020, and James E. Potter, IV, 200 Broadview, Columbia, Mo. 65201

Filed July 5, 1972, Ser. No. 269,191
Int. Cl. B30b *15/30*
U.S. Cl. 100—53 12 Claims



A coin operated refuse compactor system having a conventional compacting device provided with a receiving portion, and an arrangement for guiding refuse to this receiving portion. At least one pivotally mounted door is arranged for selectively blocking the guiding arrangement and retaining refuse therein. Advantageously, this door is arranged in an outlet opening of the guiding arrangement, while a covering door is arranged in a guiding arrangement inlet opening. A linkage is connected to the door and the covering door for positioning the door in an outlet opening blocking position when the covering door is in an inlet opening uncovering position, and conversely positioning the door in an outlet opening unblocking position when the covering door is in an inlet opening covering position. A, for example, electrically operated lock is provided for normally locking the covering door in an inlet opening covering position, while a coin operated switch is connected to the lock for selectively releasing the covering door in the presence of a coin in the coin operated device. Simultaneously with the release of the covering door is the actuation of a time delay which will eventually actuate a linear motor of the compacting device. The outlet door will open upon closing of the inlet door so as to release the refuse into the receiving portion of the compacting device for being compacted by same.

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3,793,945

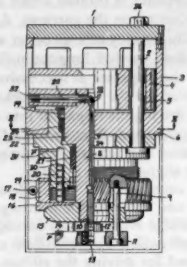
## HYDRAULIC PRESS WITH BOX- AND COLUMN-TYPE FRAME

Edmund Nowak, Warszawa, Poland, assignor to Przedsiebiorstwo Doswiadczalne Pras Automatycznych i Tloczników "Ponar-Hydomat", Warsaw, Poland

Filed Dec. 23, 1971, Ser. No. 211,280
Claims priority, application Poland, Jan. 5, 1971, 145476
Int. Cl. B30b *1/32*
U.S. Cl. 100—257 8 Claims

A hydraulic power press has a box-shaped frame whose top defines a work space with a bedplate received in that frame, the frame bottom being rigid with a hydraulic cylinder whose piston carries the bedplate. Frame and cylinder are interconnected by columns guiding the bedplate within the frame. The piston has a downwardly projecting rod terminating in an annular flange forming a shoulder which coacts with a set of plungers within the cylinder adapted to be pressurized for moving the piston with the bedplate downwardly. The upper limit of the working stroke of the piston is defined by a rotata-

ble ring threadedly engaging the lower end of the cylinder to form an adjustable abutment for the piston flange. The lower limit of the return stroke is determined by a stud, projecting downwardly from the piston, which on descending coacts with the body of a slide valve whose mounting is fixedly suspended



from the cylinder and which, besides cutting off the flow of pressure fluid to the downwardly acting plungers, also cushions the descent of the piston. The stud is threadedly lodged in the piston and can be rotated by a bevel-gear transmission inside the bedplate and the piston for adjusting the lower and of the piston stroke.

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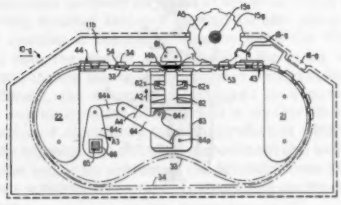
**3,793,946**

**EMBOSSER HAVING COOPERATING ENDLESS INDICIA CARRIERS DISPLACEABLE RELATIVE TO ONE ANOTHER**

**Wilbur L. Sheffield, Westwood, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.**

**Filed Sept. 1, 1971, Ser. No. 176,833**
**Int. Cl. B41j *5/30***
**U.S. Cl. 101—18** **17 Claims**



Method and apparatus for the multiple, simultaneous embossment of flexible materials using complementary, character-forming inner and outer bands for each character to be embossed. There is one pair of bands per stage, including an outer, control band and a relatively flexible inner, follower band. Within each stage, the bands are brought into registration with each other in advance of an embossing position but are permitted to move in unregistered contact towards the registration position as the bands are advanced. Beyond the registration position, the bands are separated to accomodate the material to be embossed. In one embodiment, the bands are formed by blocks with respective raised and recessed characters for the inner and outer bands. The blocks are linked together and are hinged in the case of the inner bands.

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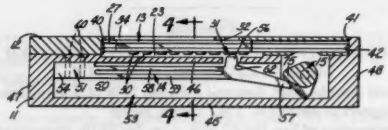
**3,793,947**

**SEQUENTIAL HAMMER IMPRINTER**

**Charles W. McVey, Eastlake, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio**

**Filed Apr. 13, 1972, Ser. No. 243,718**
**Int. Cl. B41g *47/46***
**U.S. Cl. 101—93 MN** **4 Claims**

An impact printer with character carrying slides each selectively movable to position their characters one at a time in a printing station. A rotary cam sequentially deflects and releases a plurality of hammers to impact an imprintable form



sequentially against the characters positioned in the printing stations. Substantially all of the components are formed of plastic to provide a compact and inexpensive structure.

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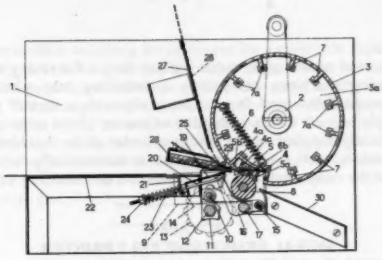
**3,793,948**

**HECTOGRAPHIC DUPLICATING MACHINE**

**Charles Andre Hugonnier, 93 Rue de Prony, Paris, France**

**Filed June 26, 1972, Ser. No. 266,397**
**Claims priority, application France, July 26, 1971, 71.27322**
**Int. Cl. B41l *11/08, 23/12*; B41m *5/02***
**U.S. Cl. 101—132.5** **7 Claims**



Hectographic duplicator comprises a master clamp formed by one edge of a groove in the pressure cylinder of the duplicator and a bar seated in said groove, together with a stationary moistening pad cooperating with a moistening table adapted to be retracted away from the pad at the end of each operating cycle.

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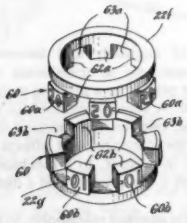
**3,793,949**

**PRINTING EQUIPMENT**

**Richard O. Rohwedder, 120 Riders Ln., Fairfield, Conn. 06430**

**Filed Feb. 2, 1973, Ser. No. 329,031**
**Int. Cl. B41j *5/14***
**U.S. Cl. 101—375** **6 Claims**



There is disclosed a printing mechanism including a wheel for printing on strip material. The wheel is made of two annu-

lar portions having interfitting teeth-bearing print symbols. The interfitting portions are interchangeable for the printing of dates, prices and the like.

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**3,793,950**

**COMBINATION NEW MASTER SUPPLY AND USED MASTER RECEIVING ASSEMBLY**

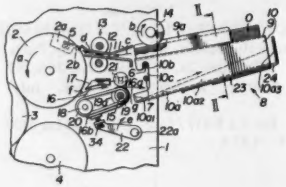
**Tamaki Kaneko, and Katsumi Mizuno, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan**

**Continuation of Ser. No. 67,045, Aug. 26, 1970, abandoned. This application Oct. 19, 1972, Ser. No. 299,090**

**Claims priority, application Japan, Sept. 4, 1969, 44-70167**

**Int. Cl. B41f** *7/00, 7/02*

**U.S. Cl. 101—142** **2 Claims**



A used master plate receiving tray device for rotary offset printing machines comprising a receiving tray which is disposed below and formed integrally with a master plate supply tray on which a plurality of master plates to be automatically supplied to the master cylinder of the machine are piled in a stack. A used master plate is automatically removed from the master cylinder and slipped into the receiving tray.

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**3,793,951**

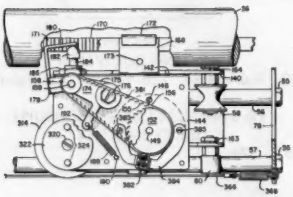
**SIGNAL RESPONSIVE BELT PRINTER**

**Ronald S. Denley, Niles, Ill., assignor to Teletype Corporation, Skokie, Ill.**

**Filed June 15, 1971, Ser. No. 153,312**

**Int. Cl. B41j** *1/60*

**U.S. Cl. 101—111** **18 Claims**



A first solenoid angularly and incrementally moves a sprocket wheel spacingly to translocate a carriage for an endless belt of the printer to a printing station in a horizontal succession thereof. A second solenoid, in response to a carriage return signal, disables transmission of the force of the first solenoid to the carriage, and effects shunting of such force, through an interposer, to a mechanism for incrementally drawing a web from a supply coil a distance equal to line spacing.

A rockable bail is adapted releaseably to secure the coil in a seat on a pivoted gate which is arranged for opening and closing a coil chamber in the printer. A pair of spreadable spaced apart bail extensions project from opposed arms of the bail and are aligned when untensioned to provide an axis for rotation for holding the coil in its seat. When spread, the extensions permit coil replacement in said seat. A pair of cams which are integral with a bracket defining the seat are followed by the arms of the bail when rocked for controlling the condition of the extensions.

The belt of the printer is trained about an impactor and a sprocket wheel mounted on the carriage. A stepping motor is adapted, through the agency of a sprocket wheel, to align successive selected dies, carried longitudinally of the belt, for image transfer by the impactor at successive printing stations. A bracket supported by the carriage rocks in response to a third solenoid for driving the impactor into a printing mode in which the belt is tensioned. Restoration of the impactor to a non-print mode eases belt tension and thereby facilitates belt adjustment for die alignment for printing.

A replaceable cartridge has an endless ribbon disposed between the belt and the web for printing. An inking roller carried in the cartridge is coupled to carriage movement during carriage translocation between line start and carriage return positions and for driving the ribbon. A clutch uncouples the inking roller during carriage return to the line start position.

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**3,793,952**

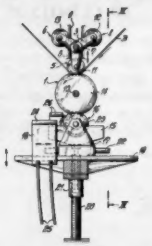
**CONVERTIBLE PRINTING MECHANISM FOR INTAGLIO AND FLEXOGRAPHIC PRINTING**

**Richard Neumann, Lengerich, and Rolf Heidenmann, Auf Der Lienenburg, both of Germany, assignors to Windmoller & Holschee, Munsterstrasse, Germany**

**Filed July 25, 1972, Ser. No. 274,989**

**Int. Cl. B41f** *9/18, 13/18*

**U.S. Cl. 101—157** **8 Claims**



A printing mechanism for printing presses is adapted to be converted from intaglio to flexographic printing and vice versa by providing a lifting platform below a replaceable plate cylinder. The platform supports a liftable ink trough, a displaceable frame for a screen cylinder, and a displaceable doctor device. A selected one of at least two impression cylinders supported in a mounting can be applied to the plate cylinder depending on whether a resilient surface is required for the impression cylinder for intaglio printing or a steel surface for flexographic printing.

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**3,793,953**

**BLASTING MAT**

**Douglas L. Lewis, Sudbury, Ontario, Canada, assignor to Sudbury Blasting Mats Limited, Sudbury, Ontario, Canada**

**Filed May 24, 1972, Ser. No. 256,264**

**Claims priority, application Canada, Aug. 31, 1971, 121814**

**Int. Cl. F42d** *5/00*

**U.S. Cl. 102—22** **8 Claims**

A blasting mat formed of a plurality of plates of resilient material arranged on edge in side-by-side relationship in contiguous rows with the rows interconnected and with the plates in each row spaced apart; flexible means is threaded through

the spaced plates and the spaced plates are secured on the flexible means so that there is sufficient movement of the plate

edges when the mat is flexed to reduce the spaces between the plates at the area of flexure of the mat.

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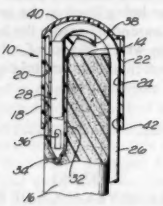
3,793,954

## DYNAMITE DETONATOR ASSEMBLY

Mack S. Johnston, 26 Hitching Post Dr., Rolling Hills, Calif. 90274

Filed Mar. 24, 1972, Ser. No. 237,851
Int. Cl. F42b *3/10, 3/18*
U.S. Cl. 102—28 R 12 Claims




A detonator assembly for sticks of dynamite which includes a cup-like housing having a pointed tubular prong therein which contains a detonator, whereby when the housing is forced onto the end of the dynamite, the prong with the detonator therein becomes embedded in the dynamite. In one embodiment, the detonator is activated by a powder fuse which extends from the housing, and in another embodiment it is activated electrically through conductors which extend from the housing. The electrical embodiment also includes bypass filter means for preventing the detonator from being prematurely activated by extraneous alternating electro-magnetic impulses.

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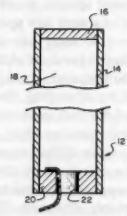
3,793,955

## BUZZING PYROTECHNIC DEVICE AND METHOD

George Klecak, 75 Lafayette, North Babylon, N.Y. 11703

Filed May 2, 1972, Ser. No. 249,631
Int. Cl. C06d *1/00*
U.S. Cl. 102—31 5 Claims




A pyrotechnic device and method for producing same which produces a novel buzzing sound effect, the device comprising a closed reaction chamber filled with a pyrotechnic whistling composition, the reaction chamber being vented or choked to produce the buzzing sound effect.

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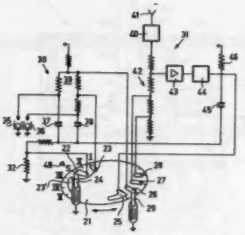
3,793,956

## SWITCHING ARRANGEMENT FOR ELECTRICAL FUSES

Lennart John Nordgren, Vallingby, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1972, Ser. No. 216,064
Claims priority, application Sweden, Feb. 2, 1971, 1291/71
Int. Cl. F42c *11/00, 13/00, 19/06*
U.S. Cl. 102—70.2 R 9 Claims




A reversible switching arrangement for a projectile capable of being detonated upon impact with a target on the one hand and at a predetermined distance from the target on the other hand. The arrangement comprises an hermetically sealed envelope adapted to be mounted at the nose of the projectile. The envelope comprises a nose and an abutting base section, that are rotated about the longitudinal axis of the projectile relative to each other to switch between the impact and the proximity fuse circuits.

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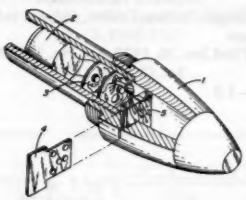
3,793,957

## GUN LAUNCHED, DIGITAL, VARIABLE TIME FUZE

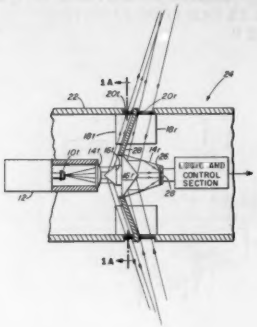
Lilburn Grady Stout, Falmouth; Robert F. Butler, and James Allen Morris, both of King George, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 18, 1972, Ser. No. 218,808
Int. Cl. F42c *13/00, 11/06, 19/06*
U.S. Cl. 102—70.2 R 5 Claims




A variable time fuze for a gun launched projectile comprises a digital electronic counter which is preset by insertion of a coded key into a slot within which are spring loaded contacts. The number which is preset in the counter depends on the pattern of conductive and non-conductive areas inscribed on the key. A clock circuit provides pulses to the counter which initiates a squib-firing network when the preset number is reached. Time delay circuits are provided to prevent accidental firing of the squib, to strobe the preset number into the counter and to allow the counter to stabilize before application of the clock pulses.

3,793,958
**OPTICAL FUSING ARRANGEMENT**
Jon G. Holt, Woburn; Gary G. Hayward, and Irving Goldstein, both of Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed June 22, 1972, Ser. No. 265,130
Int. Cl. F42c 13/02, 11/00
U.S. Cl. 102—70.2 P 6 Claims




An improved optical sensor, together with logic and control circuitry to improve reliability, is shown to provide a fusing arrangement for a missile. The sensor, which may be active or passive, includes a number of reflecting wedges affixed to the missile in such a manner that hollow, but complete, conical detecting fields are formed without detracting from the structural integrity of the missile. The logic and control circuitry includes means for differentiating between true target signals and noise signals to detonate ordance carried by the missile only in response to true target signals.

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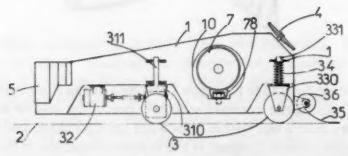
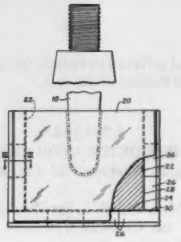
3,793,959
**AUTOMOTIVE TRUCK FOR MOVING LOADS ON A MOBILE PLATFORM**
Pierre Leuenberger, Nantes, France, assignor to Creusot-Loire, Paris, France
Filed Jan. 30, 1973, Ser. No. 328,088
Int. Cl. B61f 13/00
U.S. Cl. 104—1 R 10 Claims



An automotive truck including a motive and orientable wheel and movable over a support surface, the truck being slidable freely at a fixed orientation relative to a beam parallel to the surface, the beam being displaceable over the surface parallel to itself by the truck.

3,793,960
**TAMPER FOOT**
Robert J. McKenry, Windber, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Sept. 12, 1972, Ser. No. 288,395
Int. Cl. E01b 27/16
U.S. Cl. 104—10 8 Claims



A plate adapted for being fixed to the end of a tamper arm and having a groove extending across the leading edge and up the side edges and in which blocks of a hard wear resistant material, such as a cemented hard metal carbide, are mounted and secured in place as by brazing.

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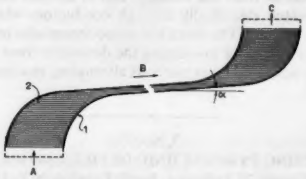
3,793,961
**SYSTEM FOR THE CONVEYANCE OF PASSENGERS OR GOODS USING A CONTINUOUS AND FAST BELT**
Rolando Salvadorini, Corso Corsica 2, Turin, Italy
Filed Dec. 27, 1971, Ser. No. 212,175
Claims priority, application Italy, Dec. 28, 1970, 71300/70; Jan. 25, 1971, 67248/71; Apr. 16, 1971, 68254/71
Int. Cl. B65g 17/06
U.S. Cl. 104—25 17 Claims



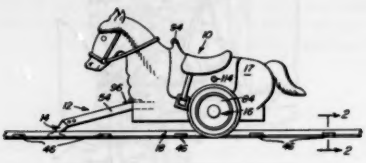
A system for the continuous conveyance of passengers and/or goods, consisting of at least one continuous belt having portions moving at different speeds, more particularly at least two end portions moving at a very low speed for the getting on and off of passengers and at least one intermediate portion moving at constant and high speed, or a plurality of high speed portions separated by low speed portions. The changes in speed may be obtained by changing the system width, and then the loading plane of the belt consists of strips connected at their ends to vertical pins so that said strips and the direction of motion may have different relative slopes, or the changes in speed may be obtained by changing the thickness of the system, which is supported by guided articulations moving along guides at variable distance. The system may also comprise a second continuous belt moving at constant and high speed, which is flanked along the whole or part of its run by said first belt, which forms a system for getting on and off said second belt.

3,793,962

## AMUSEMENT RIDE

Robert C. Sights, 5515 Green Forrest Dr., Jacksonville, Fla. 32210

Filed Dec. 1, 1971, Ser. No. 203,779
Int. Cl. A63g *15/00*
U.S. Cl. 104—61 12 Claims



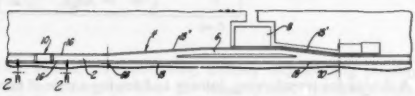
An amusement ride having a frame, electrically conductive wheels for engaging a track for partially supporting the frame and guiding same about a path of movement, and wheels connected to the frame for moving the frame about the path of movement. The wheels contact a surface on which the track is resting. An electric motor is mounted on the frame for receiving electric power from the track. The track has a longitudinally extending track member defining a substantially circular cross section, a chamber, and a longitudinally extending slot communicating with the chamber. A filler material is arranged in the chamber opposite the slot for providing a flat bed. Wires are mounted on the flat bed and extend with the track member for forming an electrical conductor and rails for the electrically conductive wheels to ride on. A body member is mounted on the frame and arranged for selective cyclical movement toward and away from the frame by a device including a cam and a cam follower mounted on a pivotal lever for selective engagement with the cam.

3,793,963

## TRANSPORTATION SYSTEM AND VEHICLE THEREFORE

John J. Mooney, Englewood; Frank E. Marshman, Boulder, and Richard H. Donlon, Littleton, all of Colo., assignors to Transportation Technology, Inc., Denver, Colo.

Filed Apr. 19, 1972, Ser. No. 245,414
Int. Cl. E01b *25/12*
U.S. Cl. 104—130 27 Claims



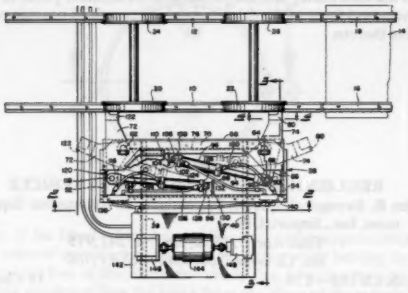
A transportation system including a vehicle guideway system having a main line, a branch line diverging from the main line, and a pair of fixed switching rails at the junction of the main and branch lines, including a main line switching rail following the main line past the junction and a branch line switching rail following the branch line past the junction. A vehicle traveling over the guideway includes a pair of switch members, one of which is movable between an active position in which it can engage the main line switching rail to cause the vehicle to follow the main line past the junction, and an inactive position in which it cannot engage a switching rail, the other of the switch members being movable between an active position in which it can engage the branch line switching rail to cause the vehicle to follow the branch line past the junction, and an inactive position in which it cannot engage a switching rail. The switch members are connected together by a switch mechanism operable to cause one of the switch members to move from its active to inactive position in response to movement of the other switch member from its inactive to active position. The switch mechanism includes over-center locking means connected with the switch members for locking the active switch member against movement from the active position in response to a force exerted on the switch member.

3,793,964

## RAILROAD CAR SPOTTING AND WHEEL LOCKING APPARATUS

Edward E. Cheek, Cleveland Heights, and Raymond H. Sabin, Willoughby, both of Ohio, assignors to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed Mar. 20, 1972, Ser. No. 235,950
Int. Cl. B61b *13/12, 15/00;* B61j *3/12*
U.S. Cl. 104—162 8 Claims



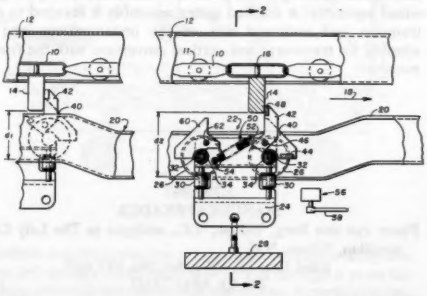
There is provided a railroad car spotting and wheel locking assembly for coaction between a pair of railroad car wheels and the rail on which the wheels are supported. The apparatus is characterized by a housing and a pair of spaced oppositely acting wheel engaging chock arms pivotally mounted in the housing for movement in a horizontal plane. Means such as hydraulic means are provided for moving the chock arms into and out of wheel locking engagement. An advantage of the present apparatus is that it can be used to effect limited movement of the railroad car or a train of railroad cars to more accurately spot the car and thus cars attached thereto for car unloading operation.

3,793,965

## ACCUMULATING LOAD TROLLEY AND CONVEYOR SYSTEM

Raymond Lewis Winters, Abilene, Kans., assignor to The Ehrsam Company, Abilene, Kans.

Filed Aug. 17, 1972, Ser. No. 281,589
Int. Cl. F04b *3/00*
U.S. Cl. 104—172 S 20 Claims



A conveyor system of the power-and-free type having an accumulation capability is provided. A trolley track extends in

juxtaposition with an endless driving means and the relative spacing therebetween is varied to provide a drive region and an accumulation region. A load trolley for use in the system includes a first drive member having an unyieldable drive position relative to the trolley for driving engagement with the driving means and a second drive member having a yieldable drive position relative to the trolley. The relative positions of the first and second trolley drive members and the system driving means are such that the driving means drivingly contacts at least the unyieldable first drive member along the driving region of the trolley track and contacts only the second yieldable drive member along the accumulation region of the trolley track. The yieldable drive member is preferably a spring biased dog. Stop means selectively interposable in the trolley path at the accumulation region prevent advancement of the load trolley and the yieldable drive member yields to the increased force of the driving means to permit its passage relative thereto.

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**3,793,966**

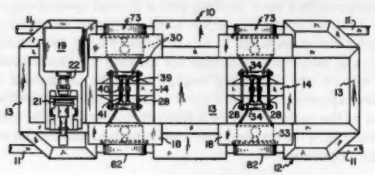
**RESILIENTLY SUSPENDED RAILWAY VEHICLE**

**Jon R. Swoager, Imperial, Pa., assignor to Automation Equipment, Inc., Imperial, Pa.**

**Filed Apr. 7, 1972, Ser. No. 241,975**

**Int. Cl. B61c** *7/00, 9/42;* **B61d** *11/00*

**U.S. Cl. 105—178** **10 Claims**



A railway vehicle having independently suspended wheel assemblies and drive means: the suspension means includes a frame member transversely movable and pivotally mounted at its inboard end to the undercarriage of the vehicle. The frame member includes at its outboard end a trunnion in which a mounting plate is pivotably received. A motor is mounted to the inboard side of the plate and includes a shaft passing through an opening in the plate to which is secured a flanged wheel assembly. A tracked spring assembly is secured to the trunnion and outboard side of the undercarriage and is adapted for transverse and vertical movement with the frame member.

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**3,793,967**

**MANURE SPREADER**

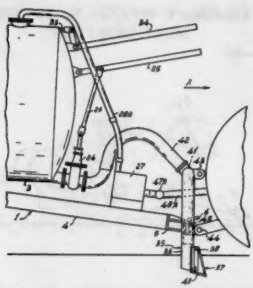
**Pieter van den Berg, Wilson, N.C., assignor to The Lely Corporation, Wilson, N.C.**

**Filed June 28, 1971, Ser. No. 157,467**

**Int. Cl. A01c** *23/02*

**U.S. Cl. 111—7** **9 Claims**

A manure spreader comprising a frame movable over the ground and a container mounted on said frame. A dispensing device is provided for supplying liquid manure from the container to an area under the ground surface. The dispenser has



coupling points by means of which it is attachable to the three-point hitch of a tractor or other propelling vehicle.

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**3,793,968**

**FABRIC, JOINING AND SEWING DEVICE**

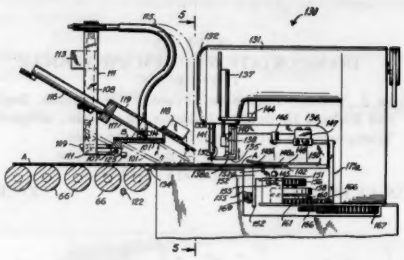
**Aubrey G. Beazley, El Paso, Tex., assignor to Farah Manufacturing Company, El Paso, Tex.**

**Division of Ser. No. 5,809, Jan. 26, 1970, Pat. No. 3,611,957.**

**This application Sept. 9, 1971, Ser. No. 178,860**

**Int. Cl. D05b** *33/02*

**U.S. Cl. 112—121.29** **12 Claims**



A device for transferring, joining and sewing a pair of fabric workpieces is disclosed wherein one workpiece is held by suitable vacuum means and transferred into contact with the second workpiece whereupon the workpieces are clamped to a movable sewing table which advances the workpieces as a sewing machine forms a line of stitch joining the two workpieces together.

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**3,793,969**

**PRESSER BAR PRESSURE CONTROL MODULES**

**Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, New York, N.Y.**

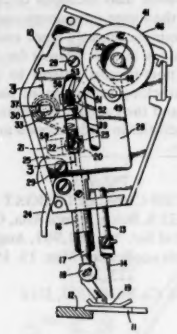
**Filed Oct. 3, 1972, Ser. No. 294,725**

**Int. Cl. D05b** *29/02*

**U.S. Cl. 112—235** **4 Claims**

A presser bar pressure control module which is mounted on a plate separable from the head of the sewing machine containing the presser bar. A mounting plate supports a cam and cam follower operatively connected with a pivotable lever attached to a stud also journaled on the mounting plate. The end of the stud protruding through the other side of the mounting plate is attached to one end of a resilient member the other

end of which presses against the presser bar to urge the presser foot attached thereto into contact with the work material.



Turning the cam alters the torque impressed on the resilient member thereby to alter the force which the presser foot exerts on the work material.

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**3,793,970**

**MACHINE FOR MAKING SPOUTS AND FIXING SAME IN CONTAINERS**

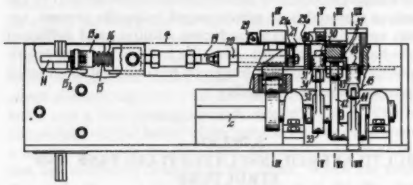
**Luigi Martinotti, Turin, Italy, assignor to Brinil S.A., Fribourg, Switzerland**

**Filed Jan. 25, 1972, Ser. No. 220,598**

**Claims priority, application Switzerland, Feb. 10, 1971, 1988/71**

**Int. Cl. B21d** *54/04*

**U.S. Cl. 113—1 H** **10 Claims**



This machine for punching, cutting and shaping pouring spouts from a metal band for miscellaneous packings comprises essentially a single shaft, connected through a bevel gear to the driving motor of the packing machine, for performing the various operations, including punching a preferably square-shaped hole engageable by a pin for feeding the metal band through the machine, such pin being pivotally mounted and driven with a horizontal reciprocating motion. Punch and die means are operated for cutting portions of the band for permitting the subsequent folding of the side wings of the spout. Other means are provided for punching into the band projecting lugs to be used for securing the spout to the packing.

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**3,793,971**

**METHOD OF MAKING COLLAR**

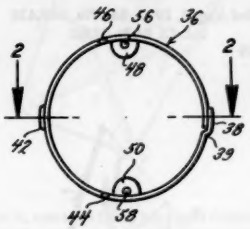
**Louis E. Mueller, Tenton, Mo., assignor to Mac-Fab Products, Inc., St. Louis, Mo.**

**Filed Apr. 13, 1972, Ser. No. 243,648**

**Int. Cl. B21d** *51/10*

**U.S. Cl. 113—1 G** **15 Claims**

A collar, for a plural-cell duct, is formed by punching generally-aligned slots in the opposite edges of an elongated piece of sheet metal stock, punching those slots so they are elongated and narrow and so the inner ends thereof extend toward but stop short of each other to define one end of a blank which remains attached to the piece of sheet metal stock by a narrow connecting portion, punching a notch in the one end of the blank adjacent the outer end of one of the slots and thus adjacent one edge of the blank, forming an offset at the one edge of the blank and displacing that offset outwardly of the outer surface of the blank and extending that offset along the one edge of the blank from the notch to the opposite end of the blank, forming arcuate portions at the opposite




edges of the blank which have radii of curvature approaching the radius of curvature to be given the collar while leaving the central portion of the blank essentially flat, severing the connecting portion to free the blank from the piece of sheet metal stock, bending the central portion of the blank inwardly and moving the opposite edge of the blank toward the one edge and into position in engagement with the inner surface of the offset at the one edge of the blank, and welding the outer surface of the opposite edge of the blank to the inner surface of the offset to permanently convert the blank into a collar of cylindrical configuration.

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**3,793,972**

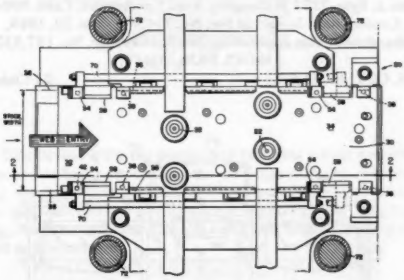
**METHOD AND APPARATUS FOR FEEDING A SHEET METAL WEB**

**Stanley J. Miller, Crystal Lake, Ill., assignor to Natonal Can Corporation, Chicago, Ill.**

**Filed Aug. 4, 1972, Ser. No. 278,041**

**Int. Cl. B21d** *43/02*

**U.S. Cl. 113—113** **5 Claims**



Method and apparatus are provided for precise feeding of a heavy and springy sheet metal web to and through a press for blanking and drawing metal cups therefrom. A preferred embodiment has a pair of fixed pneumatically actuated gripping members positioned along the edge of the web path and a corresponding pair of movable pneumatically actuated gripping

members similarly positioned. The movable gripping members grip the web edges when moving from first positions to second positions downstream. The fixed gripping members grip the web as the movable gripping members return to their first positions. Operation of the gripping members is timed with the reciprocating operation of male blank-draw punches vis-a-vis cooperating female dies.

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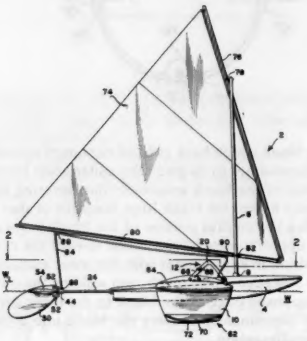
**3,793,973**

**SAILING CRAFT WITH STABILIZING FOIL AND ADJUSTABLE RUDDER**

George W. Patterson, 118 Valley Rd., New Canaan, Conn. 06840

Filed Aug. 5, 1971, Ser. No. 169,426
Int. Cl. B63b *35/00*
U.S. Cl. 114—39 9 Claims



A sailing craft including a paddle board hull carrying a sail and having an outrigger mounted canted foil equipped with a fin for added stability. The craft is sailed by a person lying prone on the hull and a longitudinally adjustable rudder is attached to the hull and is manipulated with the feet to steer the craft.

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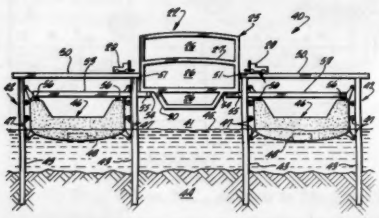
**3,793,974**

**MARINE TRANSPORT**

John J. Bylo, 7272 Willoughby Ave., Los Angeles, Calif. 90046

Continuation-in-part of Ser. No. 794,938, Jan. 29, 1969, abandoned. This application Oct. 7, 1971, Ser. No. 187,537
Int. Cl. B63b *35/44*
U.S. Cl. 114—43.5 23 Claims



An integrated marine transport system for joint or separate commercial and military uses in which a plurality of cargo containers, each sized to define the entire cargo carrying space of a vessel, are each separably mated with cooperatively configured vessels provided for moving the containers from port to port. The system also includes dock facilities configured to mate with the cargo containers and to receive and to discharge the containers directly from and to the vessels. The system also includes in-port vessels for transferring the containers from the port-to-port vessels to the docks. Also described is a novel docking arrangement useful in conjunction with the vessels and the cargo containers to provide port and cargo handling facilities in undeveloped areas.

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**3,793,975**

**REINFORCED CONCRETE BOAT HULL**

Raymond A. Duff, 1333 S. Baker, Santa Ana, Calif. 92707

Continuation-in-part of Ser. No. 851,961, Aug. 21, 1969, Pat. No. 3,664,287. This application Mar. 11, 1971, Ser. No. 123,269
Int. Cl. B63b *3/00, 5/14*
U.S. Cl. 114—65 A 17 Claims

A boat having a hull formed of a plurality of alternate, integrally bonded layers of a novel cementatious material and fiber-reinforced epoxy resin, and a method of constructing a concrete and fiber-reinforced epoxy resin boat hull are disclosed. The hull is a unitary structure comprised of a plurality of layers of the cementatious material having an integrally bonded layer of fiber-reinforced epoxy resin interspaced between adjacent layers of the cementatious material. The cementatious material is an admixture of hydraulic cement, aggregate, epoxy resin, water reducing additive, and sufficient water to harden the cement. Also, the hull can have an exterior resinous surface coating integrally bonded to it to enhance its appearance and serviceability.

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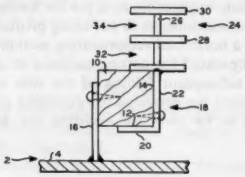
**3,793,976**

**MULTILAYERED, INSULATED FLUID TANK AND STRUCTURE**

Earl E. Kleinmann, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1973, Ser. No. 327,736
Int. Cl. B63b *25/16*
U.S. Cl. 114—74 A 10 Claims



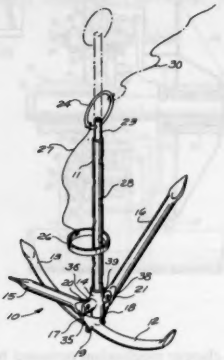
A multilayered, insulated fluid tank having supporting elements for maintaining the tank spaced from the structure and holding elements for attaching the multilayers of the tank one to the other and yet provide for some movement of the tank. Elongated attaching elements attach the various tank sections together to provide a continuous interior surface.

3,793,977

## VESSEL ANCHOR

Charles O. Ziegler, East Marion, N.Y., assignor to Herman Kanfer, Plainview, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,741
Int. Cl. B63b 21/46
U.S. Cl. 114—208 6 Claims



An anchor for a vessel includes a tubular shank having a plurality of holes, a pair of flukes extending in opposite directions from one of its ends, and a pair of holes which support a pin between and perpendicular to the flukes. Above the holes, the shank rigidly supports a coupler to which there is pivotally connected, one on each of opposite sides of the shank, a pair of flukes. Each of the pair of flukes is free to pivot within a plane passing through the axis of the pin and the shank. Further, the axis about which each fluke pivots is near an end of the fluke and the end is normally caused to abut the shank by a tension spring connecting the fluke to the pin. Thus, the pivotable flukes normally extend away from the shank at a predetermined angle. In addition, the inside of the shank slidably supports a tubular member having a plurality of holes and a link passing through one of its ends. The link is connected, via the inside of the tubular member and shank, by a tension spring to the pin. Thus, the tubular member and the link are resiliently coupled to the shank. When the anchor is dropped, the vessel's motion is absorbed by the resilient coupling, thereby preventing the vessel from drifting, and water flowing through the plurality of holes keeps the moving parts free of mud. When the anchor is out of the water, the pivotable flukes may be moved parallel to the shank and a ring which is connected by a line to the link may be slipped over them to prevent their opening, thereby permitting the anchor to lay on a deck without having upwardly projecting flukes.

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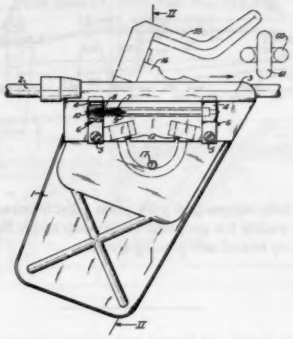
3,793,978

## EXPLOSIVELY ACTUATED UNDERWATER ANCHOR LINE CUTTER

Ernest E. Temple, Murrysville, and Joseph L. Giebel, Pittsburgh, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 193,381, Oct. 28, 1971. This application Mar. 7, 1973, Ser. No. 338,994
Int. Cl. B63b 9/00
U.S. Cl. 114—221 A 5 Claims

The frame of a chain cutter is mounted in a housing on a stabilizing fin. The fin is held on a sweep line by a pair of pivoted lugs that can be released from the line by pulling back on a spring between the lugs. Attached to the front of the cutter frame is an anvil forming with the frame a chain-receiving recess. A barrel in the frame contains a piston for driving a chisel forward through the chain link in the recess. The piston is hollow and contains a cartridge holder provided with an axial passage having a breech block in its rear end. A plunger, slidably mounted in the breech block and in an opening in the



frame behind it, carries a firing pin on its front end. The frame is provided with means, actuated by a mine anchor line in the chain-receiving recess, for suddenly increasing water pressure to drive the plunger and firing pin ahead.

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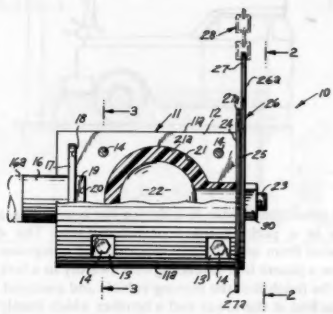
3,793,979

## PROPELLER HITCH DEVICE

Hayes J. Trosclair, 530 Fos Ave., Harvey, La. 70058

Filed Aug. 17, 1973, Ser. No. 389,116
Int. Cl. B63h
U.S. Cl. 115—.5 R 3 Claims



This device is for the purpose of retaining a boat propeller, the device being attached to the propeller shaft, by an extending shank portion embedded within a housing, the housing having on its interior a ball attached shaft riding within a bearing, the external portion of the device including a cutting disc and a rope holder.

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3,793,980

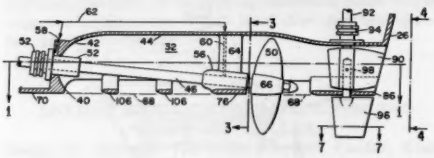
## MARINE PROPULSION SYSTEM

Peter M. Sherman, Stuart, Fla., assignor to Hydrodynamic Development Corp., Salem, Mass.

Filed Dec. 30, 1971, Ser. No. 214,337
Int. Cl. B63h 5/16
U.S. Cl. 115—39 30 Claims

A propulsion system for high speed planing hulls, employing a tunnel-mounted propeller of the supercavitating type in con-

junction with means for causing the propeller to operate partly submerged at planing speeds and, aided by the tunnel, to



operate fully-submerged with great effectiveness at low hull speed to enable the propeller to develop ample thrust to drive the craft up to and into planing speed.

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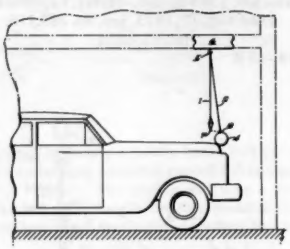
**3,793,981**
**PARKING AID**
**Meredith P. Sparks, 5129 Granada, Coral Gables, Fla. 33146**
**Filed Sept. 25, 1972, Ser. No. 291,554**
**Int. Cl. B60q**
**U.S. Cl. 116—28 R** **5 Claims**



This invention relates to a device for positioning a moving vehicle in a parking space of limited size. The device is suspended from an overhead support, and comprises in combination a plumb line extending downwardly to a level slightly above the heighth of the moving vehicle and a second line having attached at the lower end a brusher which barely touches the surface of the vehicle when the vehicle passes beneath the brusher, and moves forward as the vehicle is advanced into position.

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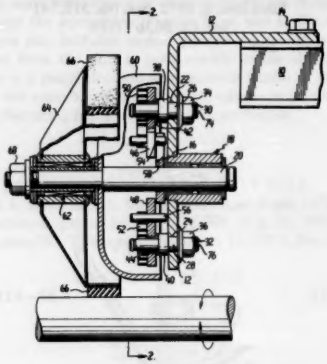
**3,793,982**
**REVERSE MOTION ALARM**
**Edwin R. Peterson, 3109 Bogus Basin Rd., Boise, Idaho 83702**
**Filed Apr. 2, 1973, Ser. No. 346,976**
**Int. Cl. B60g** *5/00*
**U.S. Cl. 116—60** **4 Claims**

A reverse motion alarm, which may be mounted anywhere on a vehicle or machine in proximity to a rotating or translating member whose direction of rotation changes with the direction of motion of the vehicle or machine, may include a friction wheel driven by the rotating or translating member, a shaft-mounted overrunning clutch which transmits rotation in one direction only, a cam driven through the clutch and a



spring biased clapper mechanism actuated by the cam which rings a bell upon reverse movement of the vehicle or machine.

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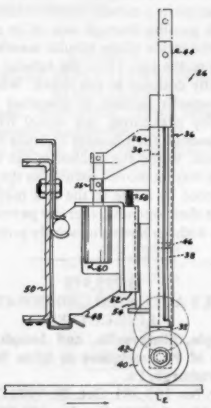
**3,793,983**
**APPARATUS FOR MARKING FLAT GLASS**
**John Shelestak, Bairdford, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.**
**Filed Apr. 20, 1972, Ser. No. 245,918**
**Int. Cl. B05c** *1/02*
**U.S. Cl. 118—7** **8 Claims**



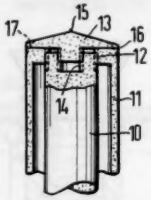
Disclosed herein are apparatus and methods for marking the location of defects in a moving ribbon or sheets of flat glass and, in particular, apparatus which comprises a marking material holder and transfer wheel assembly which is suitably supported above said ribbon or sheets of glass and arranged to be rapidly actuated into and out of contact with the glass to mark the location of defects therein.

3,793,984

## APPARATUS FOR THE PRODUCTION OF CLOSED END TUBES OF SEMICONDUCTOR MATERIAL

Andreas Kasper, Garching-Hochbrueck, and Wolfgang Dietze, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 13, 1972, Ser. No. 306,011
Claims priority, application Germany, Nov. 24, 1971, 2158257
Int. Cl. C23c 13/08
U.S. Cl. 118—48 5 Claims




In apparatus for producing semiconductor tubes by means of depositing semiconductor material from a gaseous atmosphere onto a heated receiver body, the receiver body consists of a concentric assembly of inner and outer conductive members connected at one end by means of cooperating screw threads on the two members, and a conical end cap member covering the end of the assembly and forming a smooth continuous surface with the exterior of the outer member.

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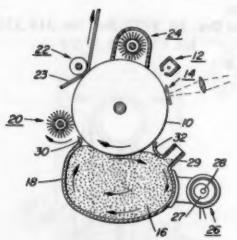
3,793,985

## IMAGING SYSTEM

Robert J. Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 567,475, July 25, 1966, Pat. No. 3,574,660. This application Dec. 30, 1969, Ser. No. 1,906
Int. Cl. G03g 13/08
U.S. Cl. 118—637 7 Claims



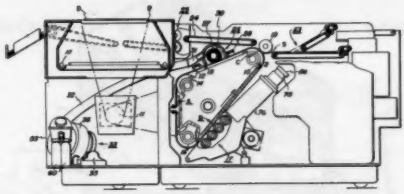

Electrostatic latent images are developed by developer material in a chamber having a curved bottom surface by transmitting to the developer material in contact with the chamber sufficient oscillatory energy to circulate a stream of the developer material in an orbital path in a substantially vertical plane, the oscillatory energy having an axis of oscillation perpendicular to the vertical plane and contacting the upper periphery of the stream of developer material with a surface bearing an electrostatic latent image.

3,793,986

## TONER RECLAIMING SYSTEM FOR ELECTROSTATIC PRINTING MACHINES

Salvatore Latone, 23 Brentwood Dr., Rochester, N.Y. 14624

Filed June 11, 1971, Ser. No. 152,136
Int. Cl. G03g 13/08
U.S. Cl. 118—637 3 Claims



A toner powder reclaiming system for use in conjunction with a photoreceptor cleaning device in an electrostatic reproduction machine, the system including a particle separator in the path of movement of air flow containing toner particles and defined by ducts arranged to receive the particles from the cleaning device. After the toner particles have become separated, they are directed to a plurality of receptacles, may be removed from the machine and used to return the toner particles back into the machine for reuse.

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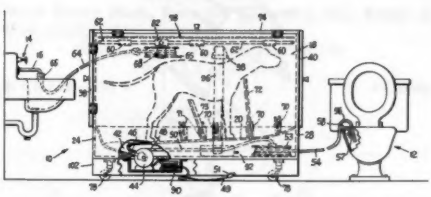
3,793,987

## DOMESTIC APPLIANCE FOR PETS

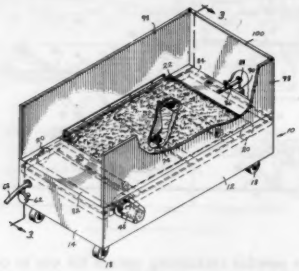
Crosby U. Rogers, 355 Silver Hill Rd., Easton, Conn. 06612

Filed Feb. 5, 1973, Ser. No. 329,600
Int. Cl. A01k 29/00
U.S. Cl. 119—1 17 Claims



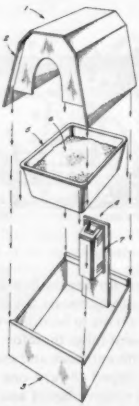
A domestic appliance for use in homes, apartments, condominiums and the like to eliminate the need for taking a pet outside. The appliance serves to facilitate washing the pet, and also serves as a convenient toilet therefor. It comprises a small enclosure or housing with entrance and exit doors, the housing having a bottom wall sloped toward one area where a drain opening is arranged to remove liquid and solids from the low bottom wall area by means of a retractable flexible hose which is adapted to extend over the rim of a toilet flush bowl. Inside the housing there is disposed a series of water jets which are connected to one end of another hose, the other end of which has a fitting for attachment to a bathroom sink faucet. The appliance is so arranged that it can be used either as a pet bath, or as a pet waste disposal apparatus, in which latter case the inside of the housing can be sprayed clean by means of the water jets, and the pump actuated to remove the rinse water and solids, so as to dispose of the same into the flush bowl. The top of the housing additionally has a grill and doors which latter can be opened to permit the owner to observe the pet while it is inside.

3,793,988
## ANIMAL TOILET
Robert S. Traeger, Rochester, Ind., assignor to KLT Industries, Inc., Rochester, Ind.
Filed Oct. 24, 1972, Ser. No. 300,110
Int. Cl. A01k 29/00
U.S. Cl. 119—1 7 Claims



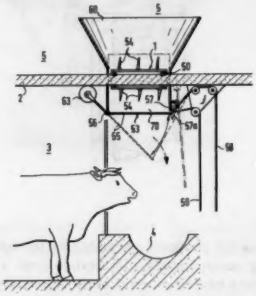
A toilet or waste disposal means for the excreta of an animal in which the excreta is carried upon a conveyor belt with the solid matter thereof being deposited in a suitable receptacle and the belt thereafter being sprayed by a suitable cleaning fluid to cleanse the belt of any urine or remaining excreta adhering to the belt.

3,793,989
## DEODORIZED PET RELIEF STATION
Thomas L. Clark, 12444 Wood Manor, Dallas, Tex. 75234
Filed Jan. 15, 1973, Ser. No. 323,764
Int. Cl. A01k 29/00
U.S. Cl. 119—1 4 Claims



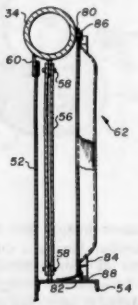
A pet house including means for distributing deodorizer throughout the pet house and means for retaining the odors and deodorizer smell within the confines of the pet house. An electric powered fan may circulate and distribute deodorizer. Deodorant may be a solid, a semi-solid, or a liquid deodorizer fed through a wick from a container supplied with liquid deodorant, or deodorizer may be automatically dispensed by a timed aerosol dispenser. The top of the pet house which is removeable serves to retain the odors and deodorizer smell within the pet house and to prevent contamination of the ambient atmosphere. Removal of the top of the pet house affords ready access to the interior of the pet house for purposes of cleaning, changing cat litter absorbent material, changing batteries in the deodorizer unit, and adding deodorant. The deodorizer unit is attached to the inside of the pet house.

3,793,990
## APPARATUS FOR MECHANICALLY DISTRIBUTING FEED TO ANIMAL FEEDING STATIONS IN A BARN
Ernst Weichel, Postfach 30, Heiningen, Germany
Filed Feb. 22, 1971, Ser. No. 117,241
Claims priority, application Germany, Feb. 21, 1970, 2008141
Int. Cl. A01k 5/02
U.S. Cl. 119—56 R 24 Claims



In an apparatus for mechanically distributing feed to spaced animal feeding stations in a barn and the like, an endless belt or chain conveyor is positioned within a housing so that at least its sides and bottom are enclosed and the housing forms a trough through which feed is delivered to the feeding stations. Longitudinally and transversely spaced prong-like extensions are secured to the conveyor and they depend from the lower surface of the conveyor to almost the bottom of the trough so that the extensions move the feed through the trough. The bottom surface of the trough is pivotally connected to the remainder of the housing for selectively discharging feed to the feeding stations.

3,793,991
## EXPANSION PLATE
Byron Joseph Round, Simsbury, and Elzens Abolins, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 26, 1972, Ser. No. 318,332
Int. Cl. F22b 37/24
U.S. Cl. 122—6 A 6 Claims



An expansion plate or sheet comprises a plurality of panels in sealed side-by-side relation, each panel including a sheet, or

sheets, which extend continuously substantially the full distance between two adjacent walls for connection in air-tight relationship therewith and most of said panels include at least one elongated depression therein which extends much of the distance between the two adjacent walls.

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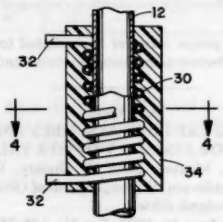
**3,793,992**
**ACCESSORY WATER HEATER FOR A GAS-FIRED WATER HEATER**

**Fidencio G. Marquez, 619 Ocean Blvd., Coronado, Calif. 92118**

**Filed July 26, 1972, Ser. No. 275,197**
**Int. Cl. F22d** *1/24*
**U.S. Cl. 122—20 B** **3 Claims**




An attachment or accessory water heater for mounting on the exhaust gas flue of a gas-fired water heater such as those sold for domestic use. There is usually a considerable space above domestic water heaters as ordinarily installed and the exhaust gas flue of such heaters ordinarily traverses this space. It is proposed bu this invention to use much of the heat otherwise dissipated through the exhaust flue to preheat, or superheat, the water. The accessory heater is essentially a heat exchanger conduit of considerable capacity capable of encircling the exhaust flue and having means for connection in series in the piping of the main heater, the conduit having thermal insulation to inhibit loss of heat to the atmosphere.

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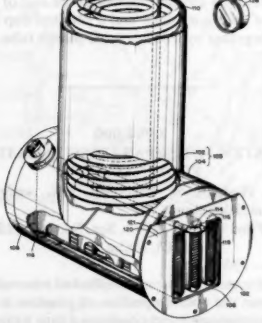
**3,793,993**
**VAPOR GENERATOR AND CONTROL THEREFOR**

**William P. Teagan, Acton, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.**

**Filed Sept. 1, 1972, Ser. No. 285,629**
**Int. Cl. F22b** *1/02*
**U.S. Cl. 122—33** **11 Claims**



The vapor generator provides a uniform and controllable heat input for vaporizing organic working fluid in a vapor engine. A fluid-tight enclosure is partially filled with a heat transfer fluid for transferring heat from a heat source to organic working fluid conducted through the enclosure in a convoluted tube. A simplified pressure responsive temperature control apparatus provides safe and accurate operation.

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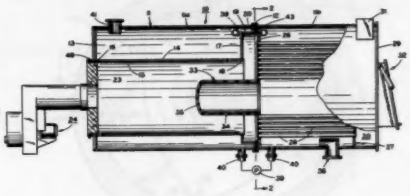
**3,793,994**
**BOILER**

**Ove M. Olsen, 2720 Park Pl., Evanston, Ill. 62001**

**Filed June 14, 1972, Ser. No. 262,782**
**Int. Cl. F22b** *9/08*
**U.S. Cl. 122—52** **9 Claims**



A boiler for use with oil or gas employs a two part cylindrical shell housing a combustion and primary heat recovery section mounted in one part and a bank of heat exchange tubes forming a secondary heat recovery section mounted in the other part. The combustion section consists of a completely immersed, large diameter firing tube in which combustion occurs and which constitutes the primary heat recovery section of the boiler. The bank of heat exchange tubes which carry the hot exhaust gases from the combustion chamber to the stack surround a closed end, tubular primary heat surface extender which extends into and is in substantial alignment with the firing tube.

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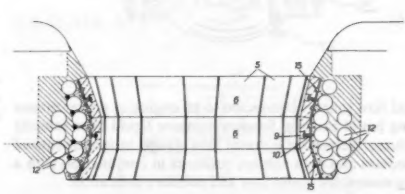
**3,793,995**
**QUARL BURNER**

**William Brown Black, Renwold, Kilbarchan Rd., Bridge of Weir, Renfrewshire, Scotland**

**Filed June 30, 1972, Ser. No. 268,149**
**Int. Cl. F22b** *37/20*
**U.S. Cl. 122—235 B** **4 Claims**



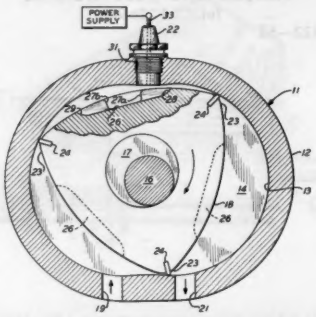
A flame-injection throat for a boiler is lined by shaped refractory tiles adjacent edges of which are complementarily rabbetted to interfit. Some of the tiles have in their front faces recesses from which extend rearwardly through the rear faces of the tiles through-openings for the passage of the shanks of bolts fast with tubes disposed in banks at each of two opposed sides of the throat. The tubes are out of contact with one another and the tube axes are normal or substantially normal to the throat axis. The tube lengths flanking the tiles at said opposed sides of the throat are fully embedded in refractory cement which anchors the tiles in place. Locking nuts are secured in the bolt shanks in said recesses and the latter are flush filled with refractory cement.

**3,793,996**

## ROTARY COMBUSTION ENGINE WITH IMPROVED FIRING SYSTEM

**Arthur M. Scheerer, Sarasota, Fla., assignor to Curtiss-Wright Corporation, Wood Ridge, N.J.**

**Filed July 18, 1972, Ser. No. 272,854**
**Int. Cl. F02b** *53/12*
**U.S. Cl. 123—8.09** **9 Claims**




A rotary engine having a special spark plug with a single electrode flush with the inner surface of the trochoidal housing and firing to a selected portion of the rotor surface at approximate times.

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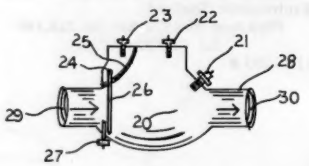
**3,793,997**

## ENGINE LIQUID FLOW INDICATING DEVICE MEANS

**Philip Michael Banner, 28-Oxford Rd., Massapequa, N.Y. 11758**

**Filed Dec. 15, 1971, Ser. No. 208,072**
**Int. Cl. G01m** *15/00*
**U.S. Cl. 123—41.15** **7 Claims**




Liquid flow sensors connected to an engine or power means requiring liquid cooling. Sensors measure liquid flow velocity and volume factors on a visual flow gauge in increments of low, medium and high volume readouts in conjunction with a warning means, for liquid flow and pressure indication.

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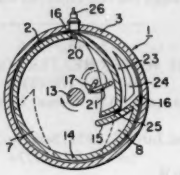
**3,793,998**

## ROTARY ENGINE

**Minoru Yokoi, and Yoshiko Yokoi, both of No. 9-9 Miyamaecho, Hakodate-shi, Japan**

**Filed June 12, 1972, Ser. No. 261,802**
**Int. Cl. F01c** *9/00*
**U.S. Cl. 123—43 R** **3 Claims**

A rotary engine comprising a hollow cylindrical casing and a hollow cylindrical rotor accommodated in said casing in rotatable fashion. An opening is provided in the cylindrical wall of the rotor, said opening being provided with a curved bulkhead extending inward along one side-edge thereof. A piston member with a surface shaped in a circular arc having a curvature identical with the surface of the rotor is pivoted on the opposite side-edge of the opening. A crankshaft is connected with said piston member and rotates relative to said




rotor so that the piston member is oscillated to form a combustion chamber between the piston member and the casing.

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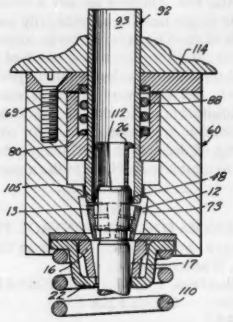
**3,793,999**

## VALVE SPRING CAP-LOCK ASSEMBLY AND METHOD AND TOOL FOR ASSEMBLY ONTO A VALVE STEM

**Donald J. Seiler, Mentor; John H. Shalaty, Wickliffe, and Frederick V. Anderson, Willoughby, all of Ohio, assignors to TRW Inc., Cleveland, Ohio**

**Filed June 30, 1971, Ser. No. 158,255**
**Int. Cl. F02l** *3/10*; **B23p** *13/00*
**U.S. Cl. 123—90.67** **26 Claims**




This invention provides a tool and method for assembling a valve spring retainer cap and lock onto the end of a valve stem with the valve spring in place and a retainer cap and lock assembly held together by a deformable plastic tube.

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**3,794,000**

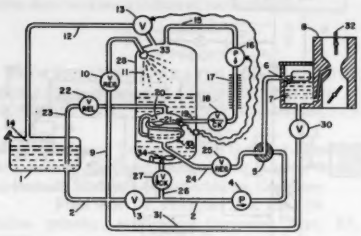
## FUEL SYSTEM FOR SEPARATING VOLATILE FUEL FROM GASOLINE

**Raymond E. Hodgkinson, Seabrook, Tex., assignor to Ethyl Corporation, Richmond, Va.**

**Filed Sept. 17, 1971, Ser. No. 181,415**
**Int. Cl. F02m** *15/00*
**U.S. Cl. 123—133** **13 Claims**

A dual fuel system for a gasoline-fueled internal combustion engine wherein the volatile portion of gasoline is vaporized in a chamber, compressed and condensed into a tank positioned within the vaporizing chamber whereby the heat of condensation is utilized to aid vaporization and any leaks in the tank are safely contained in the vaporizing chamber. The condensed volatile portion of the gasoline is delivered to the engine dur-

ing start and warm-up and gasoline is delivered the remainder of the time. Means are provided to vent the vaporizing



chamber and drain the volatile-depleted fuel to the gasoline line. Operation in this manner reduces exhaust hydrocarbon and carbon monoxide emissions.

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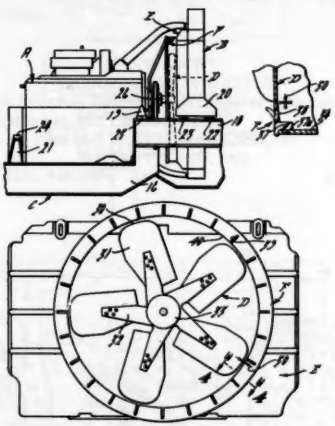
3,794,001

## VARIABLE TIP CLEARANCE ENGINE COOLING FAN SHROUD

**Philip L. Birch, Detroit, and Robert W. Morrison, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Mar. 2, 1973, Ser. No. 337,516**
**Int. Cl. F01p** *7/02, 11/10*
**U.S. Cl. 123—41.05** **7 Claims**



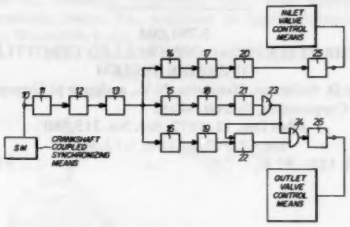
A fan & shroud assembly for use in cooling a radiator of an internal combustion engine. The assembly has a resilient insert forming part of a fan shroud which functions to vary the clearance between the shroud and fan blade tips in response to the velocity of air flow induced by the fan. The shroud yields to increasing air velocity to obtain said clearance variation and accompanying improved efficiency.

3,794,002

## PULSE GENERATOR FOR CONTROLLING THE VALVES OF AN INTERNAL COMBUSTION ENGINE

**Wolf Wessel, Schwieberdingen, Germany, assignor to Robert Bosch, GmbH, Stuttgart, Germany**

**Filed Apr. 22, 1971, Ser. No. 136,322**
**Claims priority, application Germany, Apr. 30, 1970, 2021276**
**Int. Cl. F01l** *9/04*; **F02d** *31/00*
**U.S. Cl. 123—90.11** **18 Claims**




A pulse generator rotating synchronously with the crank shaft of the engine feeds pulses to a bistable multivibrator, the output of which is conductive to an integrator through a monostable multivibrator. The integrator output is fed to a further pulse generator for generating pulses of variable keying ratio independent of engine speed, the further pulse generator comprising an impedance convertor, a storage capacitor, and a voltage-time transducer. This arrangement operates one valve of one cylinder of the engine. Additional valves can be operated by two further pulse generators for each valve, the output of the first of the two additional pulse generators being used to deliver the pulses for the second of the two further pulse generators so as to prevent simultaneous operation of the inlet and outlet valves.

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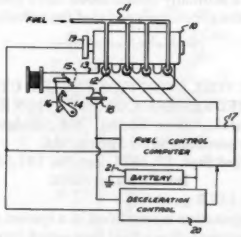
3,794,003

## PRESSURE DEPENDENT DECELERATION CUTOFF FOR AN INTERNAL COMBUSTION ENGINE FUEL DELIVERY SYSTEM

**Junuthula N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.**

**Filed Jan. 13, 1972, Ser. No. 217,569**
**Int. Cl. F02m** *51/00*
**U.S. Cl. 123—97 B** **26 Claims**




This invention relates to an electronic deceleration control, responsive to engine operating condition sensors, cooperating with an electronic fuel control computer for an internal combustion engine for curtailing or terminating the fuel delivery to the engine under selected engine operating conditions indicating an operator's demand for deceleration. The deceleration control restores normal fuel delivery to the engine in response

to a second set of selected engine operating conditions indicating the demand for deceleration has been terminated. The inventive control responds to signals indicative of the engine speed and the intake manifold absolute pressure, and computes the first time derivative of the intake manifold pressure, giving an immediate indication of the deceleration demand independent of throttle position or a minimum manifold pressure. This control system, cooperating with an electronic fuel injection control system for an internal combustion engine, substantially reduces the exhaust emissions during the period of deceleration.

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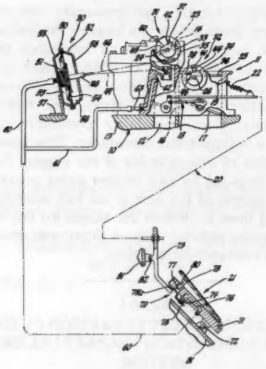
**3,794,004**
**THROTTLE PEDAL CONTROLLED THROTTLE OVERRIDE SYSTEM**

**Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Dec. 11, 1972, Ser. No. 313,780**
**Int. Cl. F02m** *13/06, 1/12, 9/08*
**U.S. Cl. 123—97 B** **3 Claims**



A throttle override system for the internal combustion engine of a vehicle wherein the choke valves and the air valves of the carburetor of the engine are connected to the diaphragm of a vacuum motor, the vacuum side of the vacuum motor being connected to a port in the throat of the carburetor and to the inlet of a normally closed bleed valve that is opened by depression of the accelerator pedal of the vehicle.

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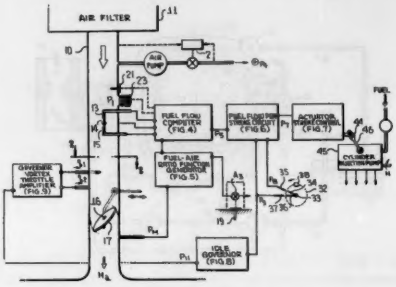
**3,794,005**
**FLUIDIC FUEL INJECTION SYSTEM UTILIZING SIMPLIFIED FLUIDIC COMPUTATION ELEMENT**

**Robert F. Turek, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.**

**Filed Sept. 17, 1971, Ser. No. 181,531**
**Int. Cl. F02m** *69/00*
**U.S. Cl. 123—119 R** **8 Claims**

Fluidic computation is simplified in a system wherein one of plural input parameters is a fluid flow which is to be multiplied by the sum of the other parameters. The primary computation element is a parallel flow sensor in which a fluid sensing jet is issued from within and parallel to the fluid flow and is received as a linear function of the fluid flow. The effects of other input parameters are included by utilizing each to vary the supply pressure for the sensing jet to thereby sum the effects of these parameters and multiply the sum by the fluid flow. In a preferred embodiment, the computation element is utilized in a fluidic fuel injection control for an internal combustion engine wherein the fluid flow is air flow through the intake manifold and the other input parameters include fuel-to-air ratio, inlet air pressure, inlet temperature and engine temperature. The resulting output signal represents the required fuel flow which is then modified by fluidic circuitry to deliver the proper quantity of fuel per cylinder stroke.

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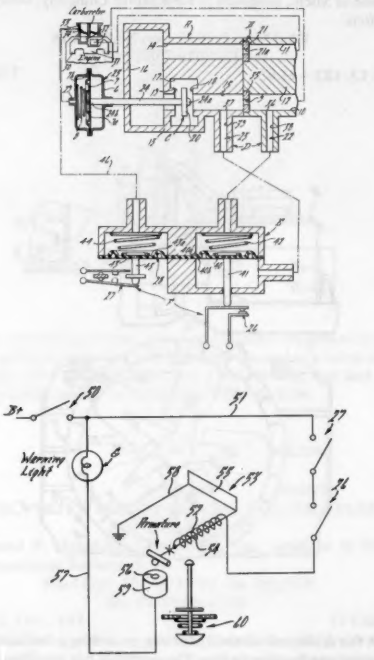
**3,794,006**
**EGR WARNING SYSTEM**

**Gary F. Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed Dec. 5, 1972, Ser. No. 312,390**
**Int. Cl. F02m** *25/06*
**U.S. Cl. 123—119 A** **6 Claims**




An exhaust gas recirculation system for an internal combustion engine is provided with a warning system for indicating to the driver of a vehicle a failure of recirculation. The

warning system employs series switches to control an electrical circuit for energizing an indicator; one switch is subject to an engine vacuum signal serving also to control admission of exhaust gas recirculation. Another switch is subject to differential pressures on opposite sides of a restrictor in the recirculation flow to sense a failure of recirculation.

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### 3,794,007
### PROCESS AND APPARATUS FOR MULTI-FUEL OPERATION OF AN AIR-COMPRESSING AND AUTO-IGNITING INJECTION INTERNAL COMBUSTION ENGINE

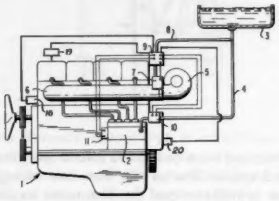
**Horst Hardenberg, Stuttgart, and Gerhard Frankle, Grunbach, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**

**Filed Mar. 27, 1972, Ser. No. 238,336**

**Claims priority, application Germany, Mar. 27, 1971, 2115001**

**Int. Cl. F02m** *31/04*; **F02n** *17/00*

**U.S. Cl. 123—122 D** **38 Claims**



A method and apparatus for the operation of an air-compressing and auto-igniting injection-type internal combustion engine for multi-fuel operation in which a flame-suction-air heater, known as such, for cold-starting operation is started during the operation of the engine under load with poorly ignitable fuels such as gasoline; the engine is thereby of the type which has a relatively low compression ratio for self-igniting fuel operation.

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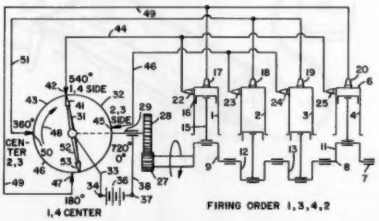
### 3,794,008
### SPARK IGNITION SYSTEM

**Clinton S. Mathews, Oakland, Calif., assignor to De Laval Turbine California, Inc., Oakland, Calif.**

**Filed May 18, 1972, Ser. No. 254,747**

**Int. Cl. F02p** *5/04*, *3/06*

**U.S. Cl. 123—148 DS** **4 Claims**




A spark ignition system is designed for a two-stroke or four-stroke cycle internal combustion engine and having first and second cylinders with pistons arriving at the combustion dead center position and the non-combustion dead center position thereof simultaneously. First and second sparkplugs in each cylinder are joined to the corresponding terminals of an ignition distributor energizing one of the sparkplugs in one cylinder at an effective cycle time and simultaneously energizing the corresponding sparkplug in the other cylinder at an ineffective cycle time. Both remaining sparkplugs are similarly energized. The two sparkplugs in any cylinder are fired effectively once each cycle but a few degrees of engine rotation apart.

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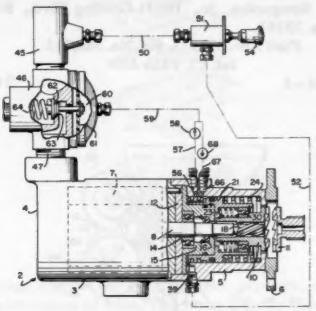
### 3,794,009
### AIR STARTER

**Thomas C. Wenrich, Charlotte, N.C., and Emanuel G. Spyradakis, Sayre, Pa., assignors to Ingersoll-Rand Company, Woodcliffe Lake, N.J.**

**Filed Sept. 5, 1972, Ser. No. 286,160**

**Int. Cl. F02n** *7/08*

**U.S. Cl. 123—179 F** **6 Claims**



A fluid-operated starter containing a fluid-operated piston that moves the starter clutch into an engagement position, a valve for opening and closing the supply line to the starter motor and the piston cooperating with a means that opens the valve upon the arrival of the piston at its extended position and closes the valve upon the arrival of the piston at its retracted position.

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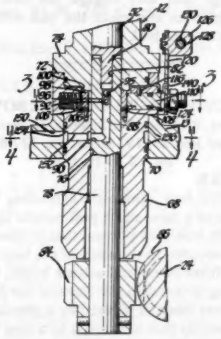
### 3,794,010
### ROTARY ENGINE OIL METERING PUMP

**James D. Palma, and Robert E. Morgan, both of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Nov. 20, 1972, Ser. No. 308,050**

**Int. Cl. F01n** *1/02*; **F16n** *13/20*

**U.S. Cl. 123—196 R** **3 Claims**



A rotary engine is provided with an oil metering pump having a shaft rotatably mounted in the pump's body that is driven

by the engine and has an expansible pump chamber which is contracted and expanded by a plunger that is mounted for reciprocal movement in a radial direction in the shaft. A ring arranged about the pump shaft effects reciprocating motion of the plunger as the shaft turns with the plunger stroke varied by varying the eccentricity of the ring in accordance with engine throttle opening. A single oil supply port in the pump's body is connected via an oil inlet-oil outlet port in the pump shaft to the pump chamber as the chamber is expanding as the shaft turns and this oil inlet-oil outlet port thereafter connects the chamber as it contracts to one oil delivery port in the pump's body and then another all during one complete pump shaft revolution.

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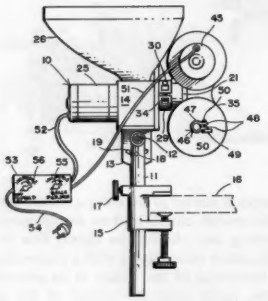
**3,794,011**

## BALL PROJECTING DEVICE WITH SPIN PRODUCING MECHANISM

**Joseph E. Newgarden, Jr., 10931-Griffing Blvd., Biscayne Park, Fla. 33161**

**Filed Apr. 6, 1973, Ser. No. 348,712**
**Int. Cl. F41b** *3/04*
**U.S. Cl. 124—1** **2 Claims**



A table tennis robot for serving table tennis balls at a predetermined rates of ejection and varying amounts of spin. The device is provided with an impeller that feeds the balls individually into a tapered passageway so that each ball comes into contact with a pair of wheels or discs with roughened outer surfaces, one of which is powered by a motor while the other is free wheeling with a brake attachment to cause variation of the amount of spin applied to a ball. The powered wheel or disc and the free wheeling wheel are on a manually rotatable carriage and they engage the ball between their roughened peripheries and eject the ball with the powered wheel adding spin to the ball.

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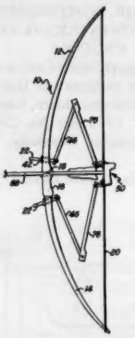
**3,794,012**

## ARCHERY BOW WITH COLLAPSIBLE BOW ARM REST

**James C. Ramsey, P.O. Box 36, Lincoln, N. Mex. 88338**

**Filed Jan. 29, 1973, Ser. No. 327,870**
**Int. Cl. F41b** *5/00*
**U.S. Cl. 124—24 R** **29 Claims**

Two collapsible bow arm rests extending between upper and lower limbs of a bow and a pull handle assembly located rearwardly of the bow mid-portion that is releasably mounted to a bow string secured to the ends of the bow. Each bow arm rest includes a front beam and a back beam, the back of the front beam being pivoted to the front of the back beam. The front of each front beam is pivoted by a pivotal connection to a butt plate assembly that is secured to a bow limb. Each butt plate assembly includes a butt plate that bears against the rear surface of a bow limb. The back of each back beam is pivoted to the pull handle assembly. A locking arrangement is provided that locks the front and back beams against relative movement when they are aligned. The butt plate assemblies are mounted to the bow limbs for forward-rearward adjustment to correspondingly adjust the forward-rearward position of the pivotal connections between the butt plate assemblies and the front beams. The butt plates are adjustably mounted on the remainder of the butt plate assemblies to enable the butt plates to bear flush against the rear surfaces of the bow



limbs. The front and back beams are folded away from the forward-rearward center line of the bow-bow string assembly when the bow is undrawn and the beams are so dimensioned that the junctures between the backs of the front beams and the fronts of the back beams are either adjacent the bow limbs or the bow string when the beams are folded. Flexible grasping fingers attached to the front beam releasably grasp the bow limbs or the bow string when the beams are folded.

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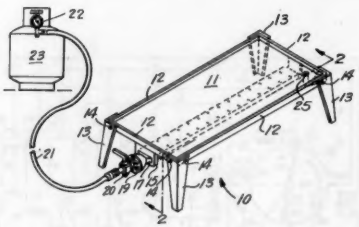
**3,794,013**

## PORTABLE GAS GRILL

**Orville C. Upton, 7421-Vandenberg, Sacramento, Calif. 95820**

**Filed May 15, 1972, Ser. No. 253,048**
**Int. Cl. F24c** *3/08*
**U.S. Cl. 126—40** **1 Claim**



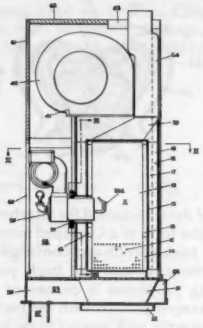
A portable gas grill to permit outdoor cooking consists of a grill plate supported on removable legs and having a gas burner suspended therebeneath. The grill plate has a drain to drain the collected grease therefrom. A portable gas tank containing liquified petroleum gas is attached to the burner with a flexible hose to provide a source of gas for the burner regardless of the location of the burner.

3,794,014

## HOT-AIR FURNACE

Dan B. McVickar, and Adolf Wolf, both of Holland, Mich., assignors to Lear Siegler, Inc., Holland, Mich.

Filed Nov. 26, 1971, Ser. No. 202,126
Int. Cl. F24h 3/10
U.S. Cl. 126—110 AA 8 Claims



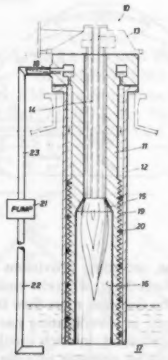
A hot-air furnace comprising a cylindrical combustion chamber with a plurality of apertures in the lower end of the combustion chamber wall through which flame jets are radially discharged into a flue chamber having a plurality of radiating vertical fins. An air chamber wall with a plurality of radiating vertical fins disposed therein surrounds the flue chamber. A novel blower means is in communication with one end of the air chamber.

3,794,015

## IMMERSION-HEATER DIP TUBE

Helmut Vietz, Kamp-Lintfort, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Nov. 4, 1971, Ser. No. 195,756
Claims priority, application Germany, Nov. 6, 1970, P 20 54 642.3
Int. Cl. F24h 1/24
U.S. Cl. 126—360 A 14 Claims



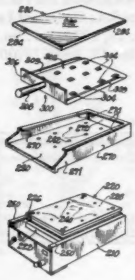
A heater comprises two concentric vertical tubes having a flame projecting down in the inner tube with the lower end of at least one of the tubes immersed in a tank of liquid, as a salt solution or an acid solution to be evaporated, condensed, and recirculated in the annulus between the tubes. Helical spiral vanes are formed in the annulus for delaying and spinning a thin, consistent film of the liquid over the contiguous surfaces of the tubes for producing considerably decreased operating temperatures of the tubes resulting in greatly decreased corrosion of and deposit formation on the heater.

3,794,016

## STEAM INJECTOR AND SPATULA

Chester J. Binks, La Grange, and Joseph M. Moser, Des Plaines, both of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Apr. 3, 1972, Ser. No. 240,348
Int. Cl. F24d 1/00
U.S. Cl. 126—369 7 Claims



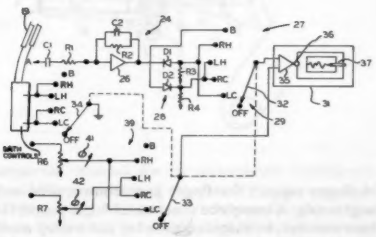
A steam injector for steaming food products, such as the heels and crowns of buns. The steam injector incorporates a platen covered by a relatively rigid clamping plate enclosing steam forming chambers and passages in the platen, and a relatively flexible, thin cover plate overlying the clamping plate. The clamping and cover plates define orifices through which steam jets upwardly into an overlying steaming chamber. The steaming chamber includes side and back flanges which are integral with the cover plate and is topped by a top plate to define an open front. A juxtaposed removable spatula is formed to provide the front wall of the steaming chamber and to support bun portions to be steamed. The base of the spatula defines steam passages ordered similarly to the steam orifices and provides crowned diffuser members overlying the orifices to baffle and diffuse the steam jetting through the steam passages.

3,794,017

## AUTOMATIC VELOCITY COMPONENT SELECTOR FOR ELECTRONYSTAGMOGRAPHS

Gerald H. Servos, 21 W. 254 Crescent Blvd., Glen Ellyn, Ill. 60137

Filed Jan. 8, 1971, Ser. No. 104,936
Int. Cl. A61b 5/05
U.S. Cl. 128—2.1 R 7 Claims



An improved apparatus for recording the velocity components in electronystagmographs. The eye position signals

obtained from sensors attached to a patient undergoing nystagmus tests are coupled to a differentiator. The output of the differentiator is attached, through switch means, to a pen actuated recorder to provide an analog recording of the velocity derivative under desired test conditions. Means are provided to readily set the pen to zero at a mid-graph location, at a top-graph location and at a bottom-graph location thereby enabling the positive and negative velocity components to be shown on the entire graph scale.

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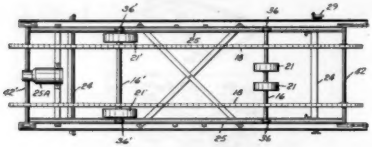
**3,794,018**
**MASSAGE DEVICE**
**Jacob Repko, RD3 Pine Rd., Conneaut Lake, Pa. 16316**
**Filed Jan. 28, 1972, Ser. No. 221,511**
**Int. Cl. A61h** *1/00*
**U.S. Cl. 128—58** **7 Claims**



A massage table having a frame supported on sprockets which carry a continuous chain. Rollers are supported on said chain. The table top has slots in it and a pad supported above said table top. The rollers extend up through the slots and engage the bottom of the pad. The chain carries the rollers completely through their orbit and the rollers deform the pad and thereby massage the person resting on the pad. The table top is adjustable toward and away from the table to adjust the vigor of the massage.

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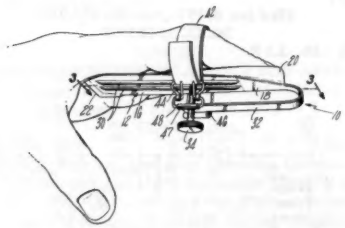
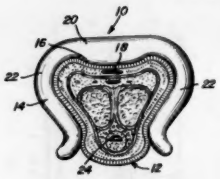
**3,794,019**
**FINGER SUPPORT**
**Gerald David Ritland, and Harold Kirk Watson, both of 85 Jefferson St., Hartford, Conn. 06106**
**Filed Jan. 29, 1973, Ser. No. 327,477**
**Int. Cl. A61f** *5/04*
**U.S. Cl. 128—77** **7 Claims**



A finger support for finger joint contractures and finger straightening. A one-piece sheet metal finger support includes a base member, an extension member and a strap member applied to the joint to be straightened and an adjustable screw engageable with the base for applying a vernierly adjustable force to the finger joint.

**3,794,020**
**ANATOMICAL DEVICE**
**Richard P. Bagby, Rt. 1, Box 176, Templeton, Calif. 93465**
**Filed June 16, 1972, Ser. No. 263,657**
**Int. Cl. A61f** *5/00*
**U.S. Cl. 128—79** **17 Claims**



An anatomical device adapted for attachment to a penis has a rigid frame in the form of a U-shaped member having a substantially planar back portion and converging leg portions extending codirectionally from the back portion. A longitudinally extending projection is connected to the U-shaped member and arranged parallel with the back portion and extending codirectionally with respect to the leg portions for applying local pressure to the dorsal vein of the penis. The U-shaped member may have two segments, one segment having walls defining a longitudinally extending cavity and the other segment having a longitudinally extending member slidably arranged in the cavity to permit the device to be adjusted for easy application or removal. The cavity and longitudinally extending member substantially form the back portion of the U-shaped member. One of the segments is provided with a catch member extending into the cavity, and the other segment is provided with a plurality of ratchet teeth arranged to engage the catch member. The pressure exerted on the leg portions by an enlarged penis causes the ratchet teeth and catch to lock at a predetermined position relative to one another.

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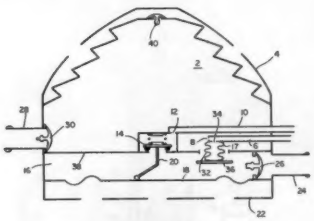
**3,794,021**
**DUAL MODE MIXED GAS BREATHING APPARATUS**
**Christian J. Lambertsen, 217 Glen Rd., Ardmore, Pa. 19003**
**Filed Nov. 3, 1971, Ser. No. 195,199**
**Int. Cl. A62b** *7/04*
**U.S. Cl. 128—142.2** **7 Claims**



Breathing apparatus, including provisions for carbon dioxide scrubbing and rebreathing, wherein basic resting oxygen supply is maintained by constant mass flow of an oxygen-containing gas, and oxygen in a ventilating gas in excess of the basic requirement is provided, in each inhalation cycle, by a demand valve actuated by collapse of a flexible gas storage chamber, the expansion of which is limited to normal exhalation volume for a predetermined level of physical exertion and means for dumping the exhalation volume in excess of that amount and sub-assemblies of such apparatus. By utilizing, as the demand supplied gas, a gas leaner in oxygen than that supplied at a constant mass flow rate, the tendency to oxygen tox-

icity during periods of exertion is reduced. Preferably, the system includes a flow-responsive, fail-safe valve to inactivate the rebreather circuit upon failure of the constant mass flow supply.

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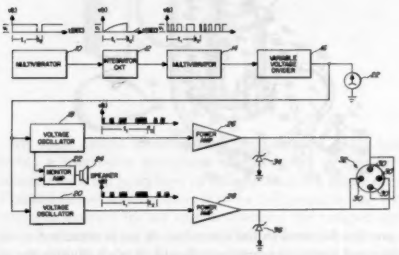
**3,794,022**

## DUAL OSCILLATOR, VARIABLE PULSE DURATION ELECTROTHERAPEUTIC DEVICE

**Edward P. Nawracaj, 3914 W. 47th St., Chicago, Ill. 60632, and Henry Greit, 3527 W. 80th St., Chicago, Ill. 60652**

**Filed June 30, 1972, Ser. No. 267,956**
**Int. Cl. A61n** *1/36*
**U.S. Cl. 128—422** **6 Claims**




A first multi-vibrator produces square wave pulses of constant voltage for a 15 second period with a three second "off" interval in between each pulse. The 15 second pulses are converted into ramp pulses of the same period and interval. The ramp pulses are used to control a second multivibrator which produces a series of constant voltage square wave pulses during the 15 second period. Each succeeding square wave pulse during the 15 second period is of a slightly longer duration so that there is a constant increase in the time duration of the square wave pulses during each 15 second period. The cycle is repeated after the 3 second "off" interval between the 15 second pulse periods. The varying square wave pulses are used to trigger separate 4KHZ and 6KHZ voltage oscillators. Each oscillator produces output pulses at their respective frequencies of the same duration and interval as the square wave inputs. The frequency pulses are amplified by separate amplifiers and the amplified pulses are applied by a body probe to the patient. Zener diodes are provided at the output of each amplifiers to limit the maximum possible voltage that may be applied to the patient.

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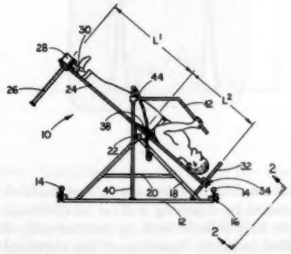
**3,794,023**

## THERAPEUTIC APPARATUS FOR THE RETARDATION OF EMPHYSEMA

**Charles J. Bradley, 3 Madeza Ave., Ross, Calif. 94957**

**Filed Mar. 21, 1973, Ser. No. 343,215**
**Int. Cl. A61f** *5/00*
**U.S. Cl. 128—68** **5 Claims**




An emphysema retarding apparatus comprising a tilt board on which a patient may position himself at a rather steep angle of inclination with his head lowermost. A handle bar extending generally parallel to the head end of the board provides leverage to enable a patient to lower and raise the board from and to a generally horizontal position, with little effort, due in part to a container of counterweights. An adjustable stop at the head end controls the maximum angle of inclination.

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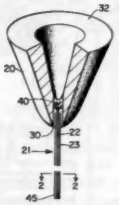
**3,794,024**

## CATAMENIAL WETNESS INDICATOR

**Darrel Dayfield Kokx, and Grace Lechner Smith, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio**

**Filed May 17, 1972, Ser. No. 254,018**
**Int. Cl. A61f** *13/20*
**U.S. Cl. 128—285** **10 Claims**




An indicator in contact with the absorbent body of a catamenial device. The indicator "reads" the wetness of the absorbent body and translates the wetness into a signal which can be sensed without removing the catamenial device.

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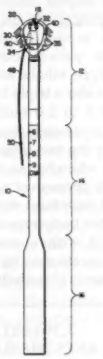
**3,794,025**

## INTRAUTERINE DEVICE SADDLE INSERTER

**Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.**

**Filed Oct. 7, 1971, Ser. No. 187,332**
**Int. Cl. A61f** *5/46*
**U.S. Cl. 128—130** **5 Claims**



An improved inserter for an intrauterine contraceptive device, or IUD, comprising an elongated body having a saddle shaped IUD retainer at the outer end thereof to firmly retain the IUD on the inserter for proper, high fundal positioning of the IUD yet permit easy disengagement and withdrawal of the inserter after IUD positioning by rotation and withdrawal along a line coincident with the path of insertion.

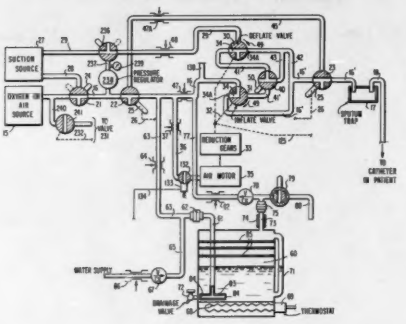
## 3,794,026
## VENTILATING APPARATUS EMBODYING SELECTIVE VOLUME OR PRESSURE OPERATION AND CATHETER MEANS FOR USE THEREWITH

**Harry Barry Jacobs, 116-13 Vantage Hill Rd., Reston, Va. 22070**

**Continuation-in-part of Ser. No. 162,944, July 15, 1971, which is a continuation-in-part of Ser. No. 59,206, July 29, 1970, Pat. No. 3,682,166. This application Aug. 3, 1972, Ser. No. 277,628**

**Int. Cl. A61m** *16/00*

**U.S. Cl. 128—145.8** **31 Claims**




A ventilating and resuscitator system for emergency and non-emergency uses which provides selective pressure or volume modes of operation. The control of flow of inflating pressurized gas, under pressures between 20 and 100 psi, is subject to either manual control or automatic control wherein the automatic control takes over ventilation or is responsive to the conditions of the patient. In the automatic mode, pressure responsive means such as pressure switches, which are responsive to the minimum or negative maximum as well as positive pressure variations in the thoracic intrapulmonary region, are utilized to program and control the inflation and deflation cycles. In addition, alarm means are provided to warn the attending personnel of patient failure, and to automatically secure a flow of breathing gas to the patient, overriding other control means. There is also provided means whereby, at desired intervals, the patient obtains ventilation effects equivalent to "sigh" type inhale and exhale cycles. The arrangement further provides a triple lumen catheter, preferably of total diameter of 0.5 to 2.0 millimeters, a flow line connected to each lumen, a pressure monitoring line and a valving system interconnecting the two minor flow lines and the pressure monitoring line whereby each minor flow line is alternately and cyclically connected to the pressure monitoring line. This arrangement maintains the pressure monitoring line free of mucous and other body secretions. While the invention is preferably practiced with a new triple lumen catheter means, other catheter means may be used. A novel inserter for the triple lumen catheter is also disclosed.

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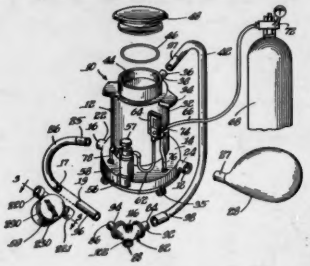
## 3,794,027
## ANIMAL ANESTHESIA MACHINE

**Donald W. Johnson, Wooster, Ohio, assignor to Snyder Manufacturing Company, Inc., New Philadelphia, Ohio**

**Continuation of Ser. No. 685,755, Nov. 27, 1967, abandoned. This application June 29, 1970, Ser. No. 50,850**

**Int. Cl. A61m** *17/00*

**U.S. Cl. 128—188** **2 Claims**



A central molded canister contains a centrally positioned charge of carbon dioxide absorbent. Located beneath the absorbent is a chamber having an outlet and two inlets and a further passageway connected to a rebreathing bag. A source of oxygen connects through a valve assembly to each of the inlets by two separate lines. One of these lines contains a first vaporizer. Leading from the outlet is a line which connects with a breathing tube and then returns to an inlet in the cannister above the carbon dioxide absorbent. A second vaporizer is connected to this line between the chamber outlet and the breathing tube. The second vaporizer comprises an inlet and an outlet communicating with a chamber. Two apertures are also located in the chamber. A jar is attached to the chamber and contains anesthetic liquid. A wick divides the jar into two sections, each communicating with one of the apertures. A vane is pivotally mounted in the chamber and is pivotal between a first position wherein the inlet and outlet communicate directly through the chamber, and a second position wherein the inlet communicates with one of the apertures, through the first section of the jar, through the wick, through the other aperture and then to the outlet.

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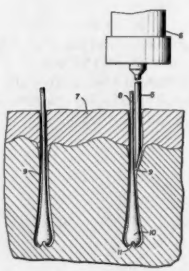
## 3,794,028
## METHOD FOR INJECTING CHEMICALS INTO THE PAPILLA FOR DEPILATION

**Robert C. Mueller, 6245 Renwick No. 261, Houston, Tex. 77036, and Amos C. Griffin, 1800 Holcombe Blvd., No. 116, Houston, Tex. 77025**

**Continuation-in-part of Ser. No. 175,068, Aug. 26, 1971, abandoned. This application Feb. 27, 1973, Ser. No. 336,222**

**Int. Cl. A61b** *17/00*; **A61m** *5/00*

**U.S. Cl. 128—216** **9 Claims**



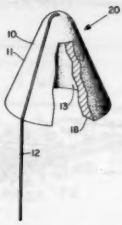
The invention disclosed provides a method of depilation in human mammal by injecting a dose of chemical depilatory solution into hair follicle such to permanently destroy hair growth at that location. Injection of the chemical depilatory solution may be effected by means of a hypodermic syringe for penetrating beneath the skin surface and for dispensing effective dosage amounts of the depilatory solution into the follicle.

3,794,029

## COMPLIANT CONFORMABLE TAMPON

Bernard A. Duile, Montgomery, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Aug. 18, 1971, Ser. No. 172,694
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 24 Claims



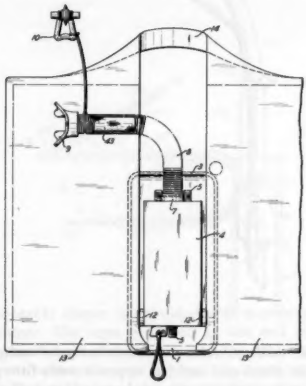

An open celled mensesphilic polyurethane foam tampon having a transverse periphery large enough to substantially coincide with the periphery of the vagina and a shape modulus of compression which allows it to be deformed by the vertical pressures exerted by the vagina whereby the tampon spreads laterally to more completely establish contact with the walls of the vagina, and having a material modulus of compression such that surface irregularities on the vaginal wall compress the tampon slightly so that the tampon surface substantially conforms to the irregularities of the vaginal walls.

3,794,030

## EMERGENCY BREATHING APPARATUS

Harry N. Cotabish, Allison Park; Layton A. Wise, Washington, and Elmer E. Buban, Monroeville, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 12,201, Feb. 19, 1970. This application Nov. 5, 1971, Ser. No. 195,907
Int. Cl. A61m *15/00*
U.S. Cl. 128—202 5 Claims



In emergency breathing apparatus a case has a back section and a removable front cover section that are normally held together. Inside the case an airregenerating canister is secured to the back section and has a port in one end, to which a flexible breathing hose is connected. The opposite end of the canister is provided with an opening in each side, each of which is connected with an opening in one end of a breathing bag extending along that side of the canister. The hose and bags normally are folded within the case. The other ends of the bags are connected by means formed to extend around the back of the neck of a user of the apparatus to suspend the bags over his chest when they are removed from the case, with the canister between the bags.

3,794,031

## ELECTRIC DOUCHE

Leonard Bloom, Towson, Md., assignor to Jerome I. Rebold, Timonium, Md., a part interest

Filed Mar. 28, 1972, Ser. No. 238,912
Int. Cl. A61m *1/00*
U.S. Cl. 128—230 8 Claims

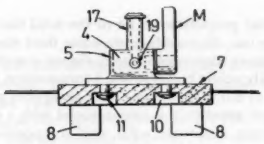
An electric douche has a generally cylindrical housing that may be quickly coupled to the neck portion of a douche bag. The housing contains a motor-driven pump for drawing the douching fluid out of the bag and discharging the same through a hose having a nozzle on its other end. A low-voltage switch is located substantially on the end of the hose, adjacent to the nozzle, for remote control of the electric douche.

3,794,032

## SUPPORTING CUFF FOR TRANSFUSIONS OR PERFUSIONS

Rene Derouineau, Moulin de Pelissey B. P. No. 2, Gradignan, France

Filed Feb. 22, 1972, Ser. No. 227,826
Int. Cl. A61m *5/00*
U.S. Cl. 128—214 R 4 Claims




Supporting cuff for transfusions or perfusions held in place on the patient's limb and supporting a removable block comprising three nozzles positioned at 90° to one another in the same plane and controlled by a three-way cock, the nozzles corresponding respectively to two female inlets which receive the liquid from the bottles and one male outlet for distributing the liquid, the male receiving the mouthpiece of a catheter tube or of an intravenous nylon tube, the three-way cock permitting either to stop the injection or to distribute in succesions the liquids from one of the bottles. The catheter tube or the intravenous nylon tube includes a loop or slack enabling the patient to move his limb.

3,794,033

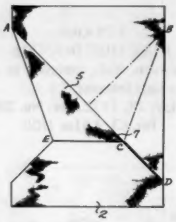
## DISPOSABLE DIAPER WITH CENTER CONSTRICTION

Arthur Sensor Ryan, Kelso, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 1, 1972, Ser. No. 230,571
Int. Cl. A41b *13/02*
U.S. Cl. 128—284 2 Claims

A contoured disposable diaper is formed from a generally rectangular flat pad wherein a pair of slits are positioned in the

sides and the resulting flaps are folded over and bonded to form a constricted center portion. By appropriately positioning the slits, the overall asymmetrical shape of the diaper can



be determined based on anatomical size while at the same time placing more absorbent material in the critical areas of severe wetting.

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**3,794,034**

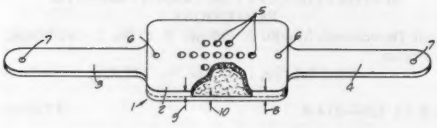
**ODOR REDUCTANT BODY WASTE PAD**

**John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif. 91105**

**Continuation of Ser. No. 131,884, April 7, 1971, abandoned. This application Feb. 27, 1973, Ser. No. 336,270**

**Int. Cl. A61f** *13/16*

**U.S. Cl. 128—290 R** **11 Claims**



A substantial proportion or all of the total thickness of an unused single use, disposable body waste fluid absorbent pad, such as a sanitary napkin and a baby diaper, combines a water soluble, weakly acidic buffered solid composition having a pH range of 3.5 to 6.0, with a waste fluid absorbent pad. The absorbent pad of wood pulp is impregnated with a dry buffered non-hygroscopic, non-toxic, solid, acid composition having an aqueous pH range of 3.5 to 6.0. The wood pulp pad structure density can range from the macerated loose random fiber of typical density 1.5–2.5 lbs/cu. ft. of the commonly sold commercial fluffed wood pulp absorbent pad sanitary menstrual napkins, to that of a 9–10 pound weight absorbent tissue paper sheet typically embodied in the menstrual napkin of the U.S. Pat. No. 3,532,097, issued Oct. 6, 1970. The controlled acid pH of the buffered absorbent pad, when the pad is wet with body waste fluids, e.g., menstrual fluids or urine of infants, inhibits the rapid formation of free ammonia gas and volatile amine compounds from urea, uric acid, amino acids and peptones by bacterial and enzyme action, and forms nonvolatile salts of the basic compounds. The buffered pH range is not irritating to the user's skin.

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**3,794,035**

**SUCTION SYSTEM FOR SKIN TREATMENT**

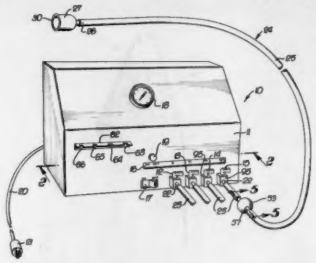
**Natalie S. Brenner, 5514 Wilshire Blvd., Los Angeles, Calif. 90036**

**Filed Mar. 7, 1972, Ser. No. 232,581**

**Int. Cl. A61m** *1/00*

**U.S. Cl. 128—300** **7 Claims**

A power operated vacuum pump unit has a chamber connected to a vacuum pump maintained under negative pressure. There are four separate shut-off valves all connected to the chamber in each of which a fixed pressure is pre-set at amounts differing one from another, all of which are accessible from one side of a housing for the operating unit. There are a series of tubes having one end connected to each of the respective shut-off valves. Each tube is adapted at its other end to receive a glass or plastic suction applicator. Inter-



mediate opposite ends of each tube is a transparent hollow spherical container having a beaded extension on each of two opposite sides for sealed engagement with a section of the respective tubing. In each spherical container is a mass of medical gauze serving as a filter for dirt laden liquids passing from the applicator end to the chamber.

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**3,794,036**

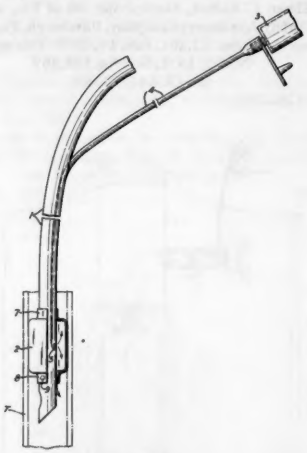
**PRESSURE REGULATED INFLATABLE CUFF FOR AN ENDOTRACHEAL OR TRACHEOSTOMY TUBE**

**Robert G. Carroll, 240 Melwood St., Pittsburgh, Pa. 15213**

**Filed Aug. 2, 1972, Ser. No. 277,316**

**Int. Cl. A61m** *25/00*

**U.S. Cl. 128—351** **5 Claims**



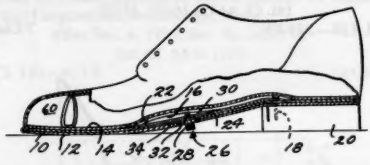
An elastic cuff encircles a tracheostomy or endotracheal tube near its distal end and has opposite ends fitting tightly against the tube, with the proximal end of the cuff sealed to the tube. A tubule with a distal end opening into the inside of the cuff extends therefrom outwardly along the tube and has an outer end for air under pressure for inflating the cuff. The distal end of the cuff forms a check valve stretchable radially away from the tube by excessive air pressure in the cuff if the air delivered thereto through said tubule results in a pressure drop across the valve exceeding a predetermined amount, whereupon the pressure drop will be reduced to that predetermined amount.

3,794,037

## ADJUSTABLE ARCH SUPPORT FOR A SHOE

William M. Matteson, 2208-10 North St., Nacogdoches, Tex. 15961

Continuation-in-part of Ser. No. 32,327, Apr. 27, 1970, Pat. No. 3,667,743, which is a continuation-in-part of Ser. No. 877,753, Nov. 18, 1969, abandoned.
Filed Apr. 3, 1972, Ser. No. 240,772
Int. Cl. A41f 5/14
U.S. Cl. 128—597 8 Claims




A shoe is provided with an adjustable arch support which is constructed to permit ready adjustment of the height and curvature of an arch formed on the insole of the shoe. An adjustment screw means is positioned to be rotated for lifting and lowering at least one arch-forming plate means located under the insole of the shoe. Downward pressure through the adjustment screw means is distributed by a pressure distribution plate positioned above the outsole of the shoe and secured at its rear end to the heel portion of the shoe. The adjustment screw means may be a accessible from the bottom, or inside of the shoe. The adjustable arch support may be included in a safety shoe construction.

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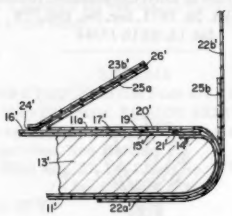
3,794,038

## DISPOSABLE DIAPER WITH TAPE FASTENER HAVING A RELEASE LINER WHICH ALSO PROVIDES A MEANS TO GRIP AND REMOVE THE TOPSHEET

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 16, 1972, Ser. No. 298,142
Int. Cl. A41b 13/02
U.S. Cl. 128—287 19 Claims



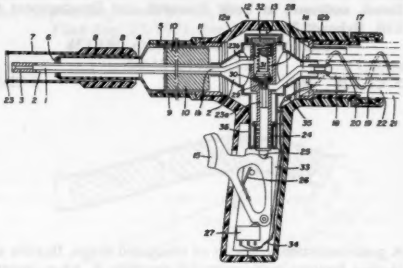

A disposable diaper is provided with a pressure-sensitive tape fastener. The tape is affixed at one end to the liquid retaining backsheet of the diaper and the other end is superposed on a release liner of a generally conventional design from which the tape may be stripped immediately prior to diaper application. The release liner for the tape overlies a portion of the face of the diaper. A first portion of the release liner is secured to the topsheet of the diaper and a second portion thereof is essentially unattached, providing a means to grasp the liner. At least the portion of the topsheet secured to the release liner is releasably secured to the remainder of the diaper so that it may be removed therefrom (after the soiled diaper is removed from the wearer) by gripping and pulling on the unattached portion of the release liner.

3,794,039

## APPARATUS FOR CRYOSURGERY

Paul Kollner, and Ewald Duczek, both of Wolfratshausen, Germany, assignors to Linde Aktiengesellschaft, Munich, Germany

Filed Oct. 26, 1970, Ser. No. 83,740
Claims priority, application Germany, Oct. 25, 1969, P 19 53 835.3
Int. Cl. A61f 7/00; A61b 17/36; F25d 3/10
U.S. Cl. 128—303.1 35 Claims



An apparatus for cryosurgery wherein the probe includes a grip member having a hollow cryogenic coolant feed line supported by said grip member open at the tip thereof and connected at one end to the cryogenic coolant supply for transmitting coolant to impinge directly upon the tissue to be frozen. A return line open at the tip thereof and concentrically disposed around the feed line forms a space therebetween, with means communicating said space to suction means for returning vaporized coolant from the feed supply line. The open end of the feed supply line is recessed with respect to the corresponding open end of the return line, allowing a cryogenic coolant to impinge directly upon the tissue to be frozen, while vaporized coolant is returned through the return line.

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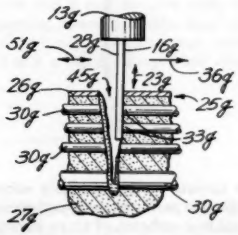
3,794,040

## ULTRASONIC SURGICAL PROCEDURES

Lewis Balamuth, New York, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Division of Ser. No. 678,649, Oct. 27, 1967, Pat. No. 3,636,943. This application Sept. 10, 1971, Ser. No. 179,459
Int. Cl. A61b 17/12, 19/00
U.S. Cl. 128—303.1 21 Claims




The method and apparatus of the invention use ultrasonic energy in the form of mechanical vibrations transmitted by a tool member to close of small severed blood vessels, such as in humans, by the formation of closures at the terminal portions thereof, and stop what is called "oozes," that requires constant mopping or cleaning techniques during an operation.

This tool member may be in the form of a knife ultrasonically vibrated to simulateously sever and close off respective terminal portions of the severed blood vessels while performing surgical procedures. The tool member, of a proper configuration, may also join together layers of tissue, including the walls of unsevered blood vessels, and with respect to the latter is foreseen as replacing the "tying off" of arteries and veins currently necessary in surgery.

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**3,794,041**

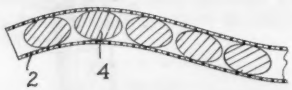
**GASTROINTESTINAL CATHETER**

**Ephraim H. Frei, and Shmuel Yerushalmi, both of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel**

**Filed Nov. 30, 1971, Ser. No. 203,138**

**Int. Cl. A61m** *25/00*

**U.S. Cl. 128—348** **2 Claims**




A gastrointestinal catheter of elongated shape, flexible and including ferromagnetic material enabling it, when inserted into the cavity of a body part, to be attracted by a magnet external of the body in order to manipulate the body part with the catheter. In the described embodiments, the ferromagnetic material is in the form of beads enclosed within a tube of inert resilient material, or strung on a string and coated with inert material.

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**3,794,042**

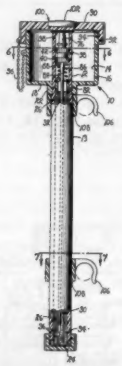
**PORTABLE CATHETER UNIT**

**Robert J. De Klotz, 4552 N. Wilson, and Kendall B. Holmes, 4766 N. Palm, both of Fresno, Calif. 93704**

**Filed Apr. 27, 1972, Ser. No. 248,088**

**Int. Cl. A611** *3/00*; **A61m** *25/02*

**U.S. Cl. 128—349 R** **1 Claim**



A portable catheter unit particularly suited for use by a paraplegic patient in performing self-catheterization. The unit is characterized by a catheter, of a type having a tubular body terminated in a ported head, and a fluid discharge port communicating with the head, through the tubular body, for discharging a flow of fluid conducted from a penetrated collection of the fluid; a manipulatable valve for controlling the flow of fluid conducted through the catheter's discharge port; a coupling for uniting the catheter with a bag receiver; and a portable sterilizer, including a confined fluid sterilant, for simultaneously receiving, supporting and sterilizing the catheter during intervals occurring between periods of catheterization, and an audible timer for alerting the paraplegic at the termination of each interval, whereby self-catheterization of the paraplegic is facilitated.

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**3,794,043**

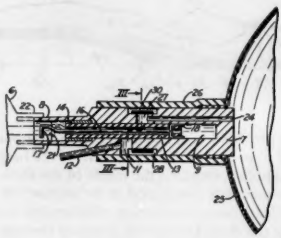
**ENDOTRACHEAL TUBE WITH INFLATABLE CUFF AND CHECK VALVE**

**Gerald E. McGinnis, Monroeville, Pa., assignor to Lanz Medical Products Company, Monroeville, Pa.**

**Filed Nov. 8, 1972, Ser. No. 304,604**

**Int. Cl. A61m** *16/00, 25/02*

**U.S. Cl. 128—349 BV** **7 Claims**



One end of an endotracheal tube is encircled by an inflatable cuff, to which is connected a tubule that extends toward the opposite end of the tube and into a valve housing having an air inlet bore from which passages extend to the tubule and to an inflatable member. The bore contains valve means normally closing the adjacent ends of said passages, and means for opening the valve to admit air under pressure to those passages or release it therefrom. The valve housing also has a bypass connecting the two passages and closed by a check valve preventing escape of air from the cuff to the inflatable member in case the outside of the cuff is subjected to sudden pressure.

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**3,794,044**

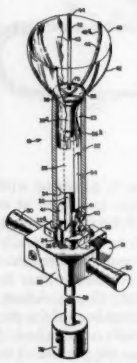
**DELIVERY FORCEPS**

**William O. Vennard, and Arthur L. Decker, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.**

**Filed Oct. 20, 1971, Ser. No. 190,779**

**Int. Cl. A61b** *17/44*

**U.S. Cl. 128—352** **11 Claims**



A method and apparatus for assisting in the delivery of a fetus from a womb which includes surrounding the upper por-

tion of the head of the fetus with a plurality of flexible fingers contoured generally to the shape of the fetus's head and securing the fingers to the fetus and then applying a pull to the fingers to assist in the delivery of the fetus from the womb. A thin membrane may be provided to interconnect the fingers whereby a vacuum may be applied to further secure the fingers and membrane to the head of the fetus.

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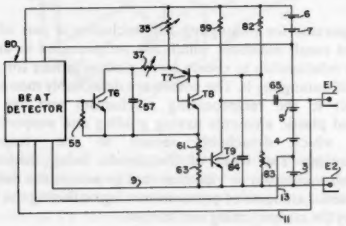
**3,794,045**

## PASSIVE HYSTERESIS CIRCUIT DEMAND PACER

**Sherwood S. Thaler, Lexington, Mass., assignor to American Optical Corporation, Southbridge, Mass.**

**Filed Dec. 6, 1971, Ser. No. 205,196**
**Int. Cl. A61n 1/36**
**U.S. Cl. 128—419 P** **14 Claims**




There is disclosed a demand pacer which exhibits rate hysteresis without requiring additional active elements. The reference potential, to which the voltage across a timing capacitor is compared, is derived from the tap on a voltage divider, with an additional capacitor being connected across one branch of the voltage divider. Whenever the voltage across the timing capacitor exceeds the reference voltage, the pacer is triggered and the capacitor in the voltage divider circuit discharges slightly. This lowers the reference voltage so that the escape interval is shortened. The escape interval gets shorter and shorter during successive cycles when stimulating pulses are generated until a lower limit is reached. If successive spontaneous beats are detected, the capacitor continuously charges until the escape interval is at the maximum limit. It requires 2–6 seconds for the escape interval to change from one extreme to the other.

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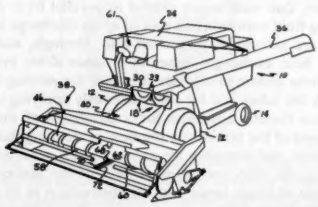
**3,794,046**

## HEADER CROP DIVIDER FOR AN AXIAL FLOW COMBINE HAVING SIDE-BY-SIDE AXIAL FLOW UNITS

**Cornelis Gerardus Muijs, Brugge, Belgium, assignor to Sperry Rand Corporation, New Holland, Pa.**

**Filed Aug. 27, 1971, Ser. No. 175,484**
**Int. Cl. A01f 7/06**
**U.S. Cl. 130—27 T** **4 Claims**




An axial flow combine having side-by-side axial flow units in which cutting means are provided on the transverse consolidated auger of the header to cut the crop material to be fed to the side-by-side axial flow units into discrete streams, one stream of material for each of the side-by-side units.

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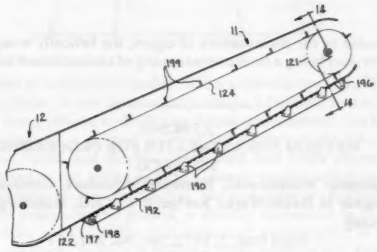
**3,794,047**

## CROP FEEDING MEANS FOR AN AXIAL FLOW COMBINE HAVING SIDE BY SIDE THRESHING UNITS

**Frans Jozef De Coene, Zedelgem, Belgium, and Edward William Rowland Hill, Lancaster, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.**

**Filed Aug. 27, 1971, Ser. No. 175,522**
**Int. Cl. A01f 7/06**
**U.S. Cl. 130—27 T** **8 Claims**




Crop feeding means for a combine having two or more axial flow type threshing and separating means, each comprising a generally horizontal and cylinderical casing with longitudinally extending concaves and grates and a rotor on an axial shaft within the cylindrical casing having rasp bars and blades cooperating with the concaves and grates, respectively, to thresh and separate grain from crop material. On the forward end of each shaft are auger flights for feeding crops to the rasp bar bearing rotor and the concaves. A sloping surface extends downwardly and forwardly from mid-portions of the auger flights to the bottom wall of the crop elevator. The crop is delivered by a crop elevator to the sloping surface for directing the crop upwardly into mid-portions of the auger flights. In one form of this invention a beater is disposed above a portion of the sloping surface, the beater facilitating the feeding of crop material from the crop elevator to the auger flights on the rotor shaft. The beater is provided with knife sections which cooperate with stationary sections facilitating the splitting of the crop material so that it may be more easily fed into the threshing and separating means. In another form of this invention the crop elevator is provided with means to sever and/or chop the material as it is being conveyed and away from the header.

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**3,794,048**

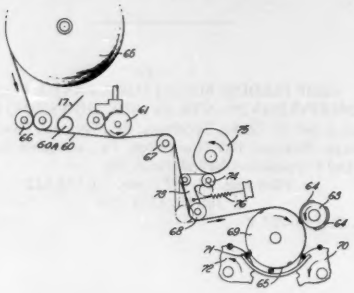
## WRAPPING ROD-LIKE SMOKING ARTICLES

**Desmond Walter Molins, and Tom Rowlands, both of London, England, assignors to Molins Limited, London, England**

**Filed Sept. 15, 1971, Ser. No. 180,724**
**Claims priority, application Great Britain, Sept. 17, 1970, 44522/70**
**Int. Cl. A24c 5/58**
**U.S. Cl. 131—94** **20 Claims**

This invention concerns making a smokable article including a tubular part, the tubular part being made by winding a

strip of sheet material in a helix with each successive turn overlapping the previous one. The invention is especially ap-



plicable to the manufacture of cigars, the helically wound tubular part being a final overwrapping of reconstituted tobacco sheet.

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**3,794,049**

**METHOD AND APPARATUS FOR PROCESSING TOBACCO**

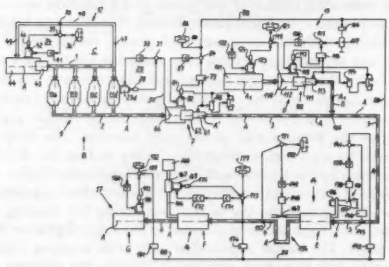
**Waldemar Wochnowski, Hamburg-Meiendorf, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany**

**Filed Mar. 2, 1972, Ser. No. 231,251**

**Claims priority, application Germany, Mar. 13, 1971, P 21 12 211.2**

**Int. Cl. A24b** *07/14*

**U.S. Cl. 131—135** **29 Claims**



A tobacco processing apparatus wherein a battery of shredding machines delivers tobacco shreds to a hopper from which a constant stream of tobacco shreds is being withdrawn by an adjustable weighing device. The tobacco stream is conveyed past a series of treating units including a drying unit, a flavoring unit and a storing unit. A main set value potentiometer is adjustable to produce signals which are used for delayed adjustment of the treating units, for direct adjustment of the weighing device and for indirect and/or direct adjustment of one of the shredding machines. Each treating unit is further adjustable by an auxiliary set value potentiometer. A second type of tobacco is being mixed with tobacco shreds at a rate which varies in response to signals from the main set value potentiometer.

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**ERRATUM**

For Class 132—5 see:
Patent No. 3,794,933

**3,794,050**

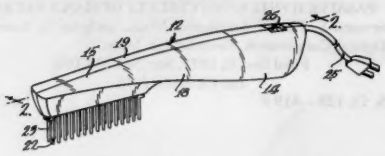
**POWER DRIVEN HAIR COMBING APPLIANCE**

**George P. Gallanis, Westchester, and Ikuo I. Komatsu, Glen Ellyn, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.**

**Filed May 8, 1972, Ser. No. 251,748**

**Int. Cl. A45d** *24/00*

**U.S. Cl. 132—11 A** **18 Claims**



Apparatus for untangling hair including a pair of closely spaced comb members which are reciprocated in an out of phase relationship to create wave motion in hair for the purpose of untangling it. The combs are detachably mounted with respect to the reciprocating mechanism and are simple, molded plastic elements having guiding and supporting portions which detachably secure to the reciprocating mechanism. The teeth of the combs being thickened to prevent oscillation or vibration and to permit the delivery of substantial amounts of power in moving or flexing the locks of hair by the reciprocating mechanism.

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**3,794,051**

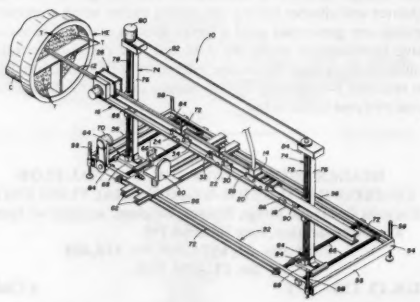
**TUBE CLEANING SYSTEM**

**Charles O. Lee, Jr., Long Beach, and Earis Ray Shanklin, Torrance, both of Calif., assignors to Hydro-Vel Services, Inc., Monahans, Tex.**

**Filed Sept. 17, 1970, Ser. No. 73,130**

**Int. Cl. B08b** *3/02, 9/02*

**U.S. Cl. 134—46** **5 Claims**



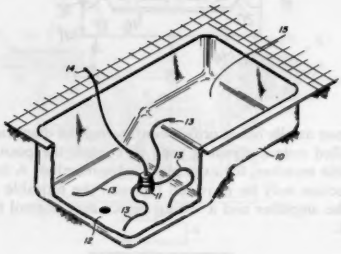
In a tube cleaning system, a pair of long, straight, small diameter, thin wall lances extend in parallel from a common cleaning fluid manifold to a pair of spray discharge heads. The lances are automatically moved into, through, and out of a pair of heat exchanger tubes by a lance drive system. The lance drive system comprises structure for moving the lances through the tubes and for simultaneously applying straightening forces thereto, apparatus for controlling both the extent of movement of the lances and the flow of cleaning fluid through the lances, and circuitry for automatically reversing and re-reversing the direction of movement of the lances upon engagement of either lance with an obstruction in its respective tube. The lance drive system is mounted on a frame which includes structure for aligning the lances with a pair of heat exchanger tubes prior to each operating cycle of the tube cleaning system.

3,794,052

## POOL-CLEANING APPARATUS

Robert L. Koble, Jr., 4211 E. Desert Cove Rd., Phoenix, Ariz. 85028, and John M. Goettl, 1639 W. Indianola Ave., Phoenix, Ariz. 85015

Continuation-in-part of Ser. No. 53,468, July 9, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,353
Int. Cl. B08b 9/08
U.S. Cl. 134—167 R 3 Claims



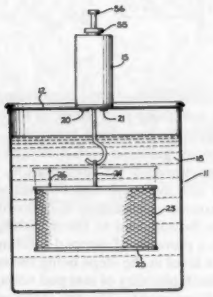
A swimming pool cleaning apparatus comprising a water distributor having a weight means for holding said water distributor on the bottom of a swimming pool; a passage means in said distributor for receiving water under pressure; a plurality of flexible substantially equally spaced apart pressure operated sinuously movable tubes communicating with said passage means and extending generally radially from said distributor and from the center of said weight means; a water supply tube extending upwardly generally concentrically above the center of said weight means and communicating with said passage means; said weight means having relative buoyant means thereabove; said apparatus usable relative to a method of the invention for collecting relatively heavy debris concentrically around said weight means and in close proximity thereto.

3,794,053

## CLEANING APPARATUS

Otho Jones, 1438 W. 132rd St., Gardena, Calif. 90249

Filed Oct. 18, 1971, Ser. No. 190,062
Int. Cl. B08b 3/04
U.S. Cl. 134—141 5 Claims



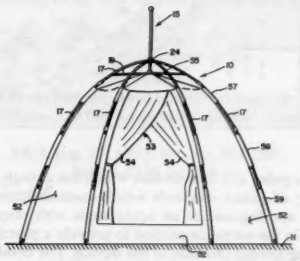
A cleaning apparatus is disclosed herein having a tank for holding a solvent solution and a lid for covering the tank. An agitating mechanism is carried on the lid including a vertically movable hook for detachably supporting a basket adapted to hold parts for cleaning. The agitating mechanism includes a pneumatic operated piston and cylinder assemblage for actuating the hook in an up-and-down manner.

3,794,054

## INVERSE UMBRELLA TENT

Paul J. Watts, 285 E. Ninetta Cir., Orem, Utah 84057

Filed Nov. 1, 1971, Ser. No. 194,237
Int. Cl. A45f 1/04
U.S. Cl. 135—2 12 Claims



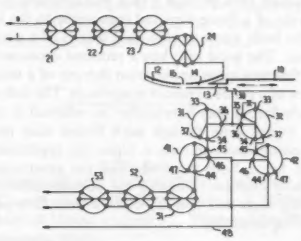
A tent or collapsible shelter of the umbrella tent-type. The tent includes, in one lightweight package, a foldable frame and a tent cover affixed to the frame. In one embodiment, the tent frame includes a vertical erecting rod located at the apex of the tent frame and flexible, segmented tent poles pivotably connected at the upper ends to a sleeve section which is, in turn, slidable on the erecting rod. The tent cover is attached to the tent poles near the ground, is slidably connected to an intermediate section of the tent poles and is connected at the top to the sleeve section at the base of the erecting rod. In this manner, the tent cover is tautly affixed to the tent frame in an erected position and is loosely affixed to the tent frame in a collapsed position. The sections of the segmented tent pole are connected to one another in the collapsed state and are elastically urged into an intercoupling engagement to form a rigid support upon erection.

3,794,055

## TECHNIQUES FOR BI-DIRECTIONAL FLUID SIGNAL TRANSMISSION

Larry R. Moore, and Robert F. Turek, both of Silver Spring, Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Feb. 15, 1972, Ser. No. 226,791
Int. Cl. F15c 1/12; E03b 1/00
U.S. Cl. 137—1 18 Claims



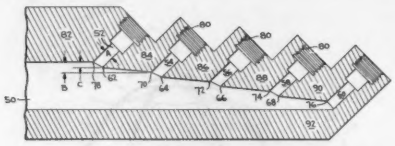
Reliable bi-directional transmission of binary fluid signals over a single transmission path is achieved by utilizing opposite polarity pressure pulses to represent respective binary states. A novel fluid transceiver includes a common passage connected to the transmission path to both receive and transmit positive and negative pressure signals. Detection of received signals is effected either within the transceiver element or at a tap in the transmission path proximate the transceiver. Means are disclosed to compensate the signal detector for continuous ambient flow through the transmission path.

3,794,056

## FLUIDIC PULSE AND FLOW DIVIDER

Raymond W. Warren, 7925 Falstaff Rd., McLean, Va. 22101

Filed Nov. 17, 1972, Ser. No. 307,718
Int. Cl. E03b
U.S. Cl. 137—561 A 8 Claims



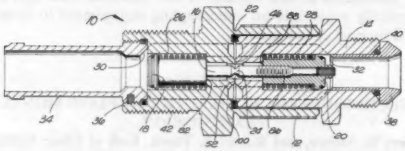
A fluidic pulse and flow divider which has a single input and a plurality of outlet channels which communicate with the input and are disposed at an acute angle with respect to the fluid flow in the entrance section to provide a plurality of fan-outs exiting toward one side of the device. The combined area of the outlets is equal to the area of the entrance flow straightening section to eliminate reflection of waves. The area of the entrance section itself is smoothly reduced before each successive outlet channel by an amount equal to the area of the preceding output channel.

3,794,057

## SAFETY BREAKAWAY FLUID COUPLING

Everett H. Badger, La Habra, Calif., assignor to Textron Inc., Providence, R.I.

Filed June 26, 1972, Ser. No. 266,179
Int. Cl. F16k 17/36, 17/40
U.S. Cl. 137—68 10 Claims



A fluid coupling assembly having a pair of housing parts which are held together by a prestressed solid bolt. The poppet valves are disposed at each end of the bolt and are spring-loaded toward respective valve seats. One of the body parts has a reduced area portion which will fracture upon application thereto of a force directed transverse to the longitudinal axis of the body parts (a side-load force) of a predetermined magnitude. The solid bolt has a reduced cross-sectional area and will fracture upon application thereto of a tensile or side-load force of a predetermined magnitude. The side-load forces and tensile forces may hereinafter be referred to as non-compressive forces even though such forces may include components compressive in nature. Upon the application of an appropriate force, both the body and the prestressed bolt will sequentially fracture releasing the poppets allowing them to engage the seats and thereby close a fluid flow path through the coupling assembly.

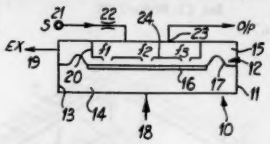
3,794,058

## PNEUMATIC AMPLIFIERS

John Terence Riley, Bank St., Walshaw, Bury, England

Filed Feb. 9, 1972, Ser. No. 224,838
Claims priority, application Great Britain, Feb. 11, 1971, 4439/71; Feb. 11, 1971, 4440/71
Int. Cl. G05d 16/06
U.S. Cl. 137—82 9 Claims

There is described a pneumatic amplifier comprising a housing, a diaphragm dividing the housing into first and second chambers, an inlet port to the first chamber for receiving an input signal, an exhaust port from the second chamber, a manifold in the second chamber, an inlet port to the manifold for a supply of pressure air, and an outlet from the manifold for an amplified output signal, the manifold having at least one axially offset orifice confronting the diaphragm. The amplified output signal is used to control the position of a movable member, for example a valve member. A feed-back connection may be provided between the movable member and the amplifier and a setting device may control the input signal.

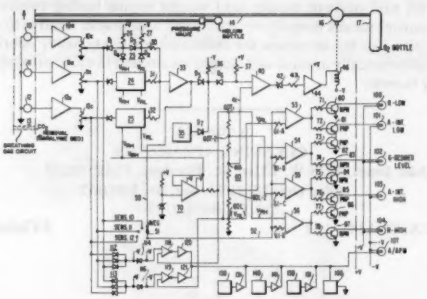


3,794,059

## ELECTRONIC MONITORING CONTROL AND DISPLAY APPARATUS FOR BREATHING GAS SYSTEM

John F. Burt, Jr., Glenside, Pa., assignor to Biomarine Industries, Inc., Devon, Pa.

Filed May 27, 1970, Ser. No. 40,890
Int. Cl. G05d 11/00
U.S. Cl. 137—93 8 Claims



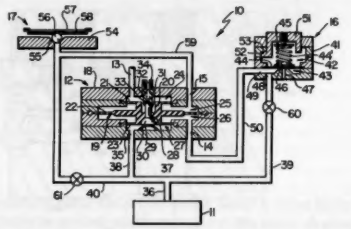
There is disclosed an electronic monitoring, control and display system for breathing gas system, as for example, in a self-contained underwater breathing apparatus. The output voltage of one or more galvanic partial oxygen pressure sensors, after being compensated for temperature variation, is amplified, limited and averaged and (1) periodically compared with a first reference voltage level to determine whether make up oxygen is to be supplied to the breathing system and (2) compared with a plurality of stepped reference voltage levels, an intermediate level in the steps being the said first reference voltage level. Such plurality of stepped voltage levels are used in a plurality of comparator circuits along with logic circuitry and a bank of display lamps to digitize the conditioned signal voltage from the sensors, the logic circuitry permitting the energization of only one lamp to the exclusion of all others (except an alarm lamp) to eliminate any ambiguity or need for interpretation in the display to the user. In a preferred arrangement a plurality of lamps of the miniature type are housed in a straight row within a waterproof housing which is adapted for securement to the wrist of the diver.

3,794,060

## PNEUMATIC CONTROL SYSTEM AND METHOD OF OPERATING THE SAME OR THE LIKE

Charles H. Perkins, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 81,828, Oct. 19, 1970, Pat. No. 5,683,949.
This application June 21, 1972, Ser. No. 265,111
Int. Cl. G05d *16/00*
U.S. Cl. 137—14 9 Claims



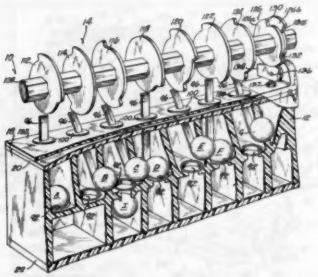
Passage defining means interconnecting a source of pneumatic fluid to a pneumatically operated control device. Flow control variable restrictor means is disposed in the passage defining means intermediate the source and the control device whereby the passage defining means has a part thereof disposed between the restrictor means and the control device. A variable vent means is interconnected to the part of the passage defining means and is responsive to pressure in that part of the passage defining means. The flow control variable restriction means tends to maintain a substantially constant pneumatic flow in the part of the passage defining means even though the pressure in the part of the passage defining means varies and/or the pressure of the pneumatic source varies.

3,794,061

## WATER SOFTENER VALVE

John F. Horvath, Milwaukee, Wis., and Chester R. Nickols, Sycamore, Ill., assignors to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Nov. 8, 1971, Ser. No. 196,621
Int. Cl. C02b *1/22*
U.S. Cl. 137—330 8 Claims



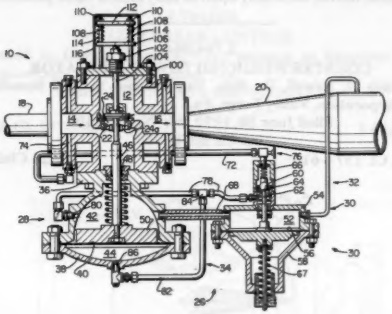
A water softener control valve has a number of cam operated valves each of which includes a ball located at a port. A lever is associated with each ball and lever movement by the cams unseats the balls to open the ports. The ports are located in a common, generally horizontal wall and internal generally vertical walls associated with the ports define channeling through which water is directed in achieving the service, backwash, brine slow rinse, and fast rinse cycles of the water softener, and in addition the brine tank water refill after the mineral bed of the water softener has been regenerated. Water pressure urges the balls toward their respective ports and holds the balls seated in the ports. One port is exposed, during the regeneration portion of the water softener program, to both return flow from the mineral tank on one side of the port and service flow to the service outlet on the other side. That port has a ball on both sides of the port to insure closure of the port and isolation of the flow on both sides of the port.

3,794,062

## FLUID PRESSURE REDUCING VALVE

Jay P. AuWerter, 23726 Laureldale, Shaker Heights, Ohio 44120

Filed Aug. 17, 1972, Ser. No. 281,289
Int. Cl. F16k *31/365*
U.S. Cl. 137—488 5 Claims



A self-contained, pilot operated valve is disclosed which is adapted to be interposed in a fluid flow line to reduce the pressure therein from one level upstream of the valve to a desired lower level downstream of the valve. The reducing valve is fluid pressure responsive, employs system fluid as a normally closed reducing valve having fluid flow characteristics across the valve and valve seat thereof of a normally open reducing valve. The normally open flow is obtained by seating the flow control valve element against its valve seat in the direction opposite the direction of fluid flow through the valve, and the normally closed characteristic is achieved by applying a force on the valve element sufficient to seat the valve element when the downstream pressure is at the desired level.

3,794,063

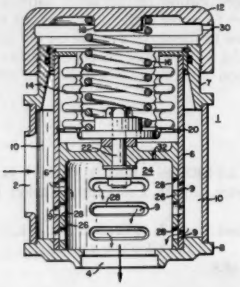
## REFRIGERANT THROTTLING VALVE

Michael O. Carroll, Rosemont, and Lawrence J. Shirek, Minneapolis, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Jan. 23, 1973, Ser. No. 325,967
Int. Cl. F16k *17/34*
U.S. Cl. 137—505.26 4 Claims

This invention relates to a fluid pressure regulating valve that may be used for a refrigeration system and which includes an inlet, an outlet, and a first interface member therebetween having a plurality of fluid ports. Slidably disposed to be movable relative to the first member is a second interface member, the walls of which also include a plurality of fluid ports. The configuration of the respective fluid ports of the first interface member is different relative to the configuration of the respec-

tive ports of the second interface member to thereby perform throttling of the fluid passing therethrough in non-linear



fashion to thus regulate the valve output as the movable member moves from fully open to fully closed valve position.

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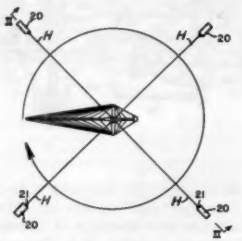
**3,794,064**
**COUNTERWEIGHTED TOWER IRRIGATOR**

**Stephen D. Newell, Du Bois, Pa., assignor to Alco Standard Corporation, Valley Forge, Pa.**

**Filed June 30, 1972, Ser. No. 268,100**
**Int. Cl. B05b 3/00**
**U.S. Cl. 137—615** **21 Claims**



A rotatable irrigating apparatus for dispensing water or other liquids over a large crop area has a central column or turret from which a sectioned pipe member carrying a liquid dispensing truss arm assembly extends radially outwardly for covering a large crop area or acreage during a 360° rotation thereof. The weight of the arm assembly is substantially balanced by an aligned, oppositely positioned and radially extending, relatively shorter length, sectioned counterweight truss that represents a non-spraying frame structure. The arm assembly as well as the counterweight assembly are connected at spaced intervals along their upper reaches by opposed tension gravity cables to a top or surmounting end portion of the column and are connected at more closely spaced intervals along their sides by tension wind cables to a cross-extending support arm that is carried by a lower end portion of the column or turret. Also, the upper end portion of the column has a relatively rotatably mounted anchor collar that is connected by guy or anchor cables to stationary ground anchor or tieing means.

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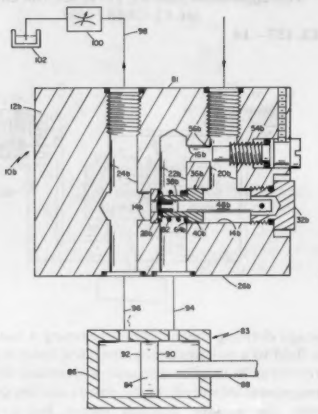
**3,794,065**
**VALVING**

**James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.**

**Filed Mar. 1, 1972, Ser. No. 230,561**
**Int. Cl. G05d 7/00**
**U.S. Cl. 137—117** **10 Claims**

A fluid valve comprising first and second interior chambers, a valve bore extending between the chambers, an exit port in a wall of the first chamber generally opposite the valve bore, a piston including a first portion slidably within the valve bore and, a second portion extending from the first portion to the exit port mounted for movement between a first position wherein the second portion overlies the exit port and a second



position wherein the second portion is spaced from the exit port, the piston including also a bore extending therethrough and the first and second portions being of different cross-sectional areas, and a fixed balance pin extending from within the piston bore into the second chamber, the piston being slidable on the pin.

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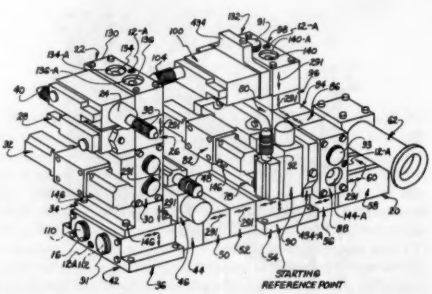
**3,794,066**
**HYDRAULIC CONTROL APPARATUS**

**Robert E. Raymond, Zanesville, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.**

**Filed Dec. 29, 1971, Ser. No. 213,314**
**Int. Cl. F16k 11/10**
**U.S. Cl. 137—312** **12 Claims**



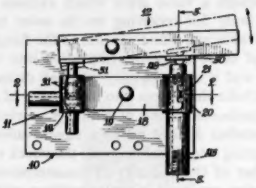

A hydraulic control apparatus comprising a plurality of standard multiple function conduit modules adapted to be selectively programmed in various arrays to effect substantially any required hydraulic control functions. The apparatus is further characterized by leakage collection zones at the interfaces of adjacent modules and a common drain passage through said adjacent modules.

3,794,067

## SIMPLIFIED VALVE ASSEMBLY

Leonard R. Beck, 3602 Meadow Dr., Rolling Meadows, Ill. 60008

Division of Ser. No. 258,868, June 1, 1972. This application June 7, 1973, Ser. No. 367,873
Int. Cl. F16l 5/00
U.S. Cl. 137—343 5 Claims



A mounting plate has a clip which holds a valve body and a spring body in spaced positions against the plate. A plunger in the spring body urges an operating lever in a direction such as to bear against the valve stem extending from the valve body. A valve closure is formed by two O-rings on the opposite side of a pressure plate. The valve closure is movable between a position at which one O-ring blocks an air inlet and a second position at which the other O-ring forms a seal about the valve stem.

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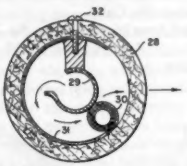
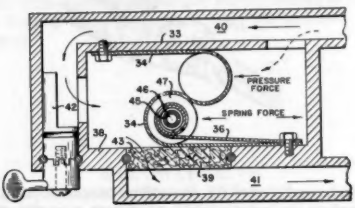
3,794,068

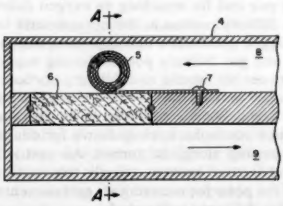
## NEGATOR-SPRING, ROLLING-TAPE, FLOW-CONTROL, QUIET THROTTLING VALVE

Richard A. Milroy, 222 S. Cherry Grove Ave., Annapolis, Md. 21401

Filed Apr. 24, 1973, Ser. No. 354,061
Int. Cl. G05d 7/00
U.S. Cl. 137—497 9 Claims





A negator-spring is used as the rolling flow-control gate of a flow-control valve. The negator-spring is a strip of flat spring stock which is stressed on one side to make it roll upon itself. Fluid flows across the roll of negator-spring so that a pressure differential exists across the negator-spring roll. Any increase in the flow rate would cause the negator-spring to be extended or rolled out further upon the porous surface. The negator-spring is fixed at one end and is forced by the differential pressure to roll out over a port containing material which provides a fluid passage through its pores. Traditional springs increase or decrease in force with the amount extension. The spring force of the negator-spring is constant all along its length. Therefore, the valve configuration maintains the flow rate at a constant level since any increase or decrease in the differential pressure across the spring roll will cause a corresponding extension or contraction of the negator-spring which in turn will result in a change in the flow cross-sectional area of the porous material port until an equilibrium is again reached. The flow through the porous material causes quiet throttling of the fluid while the flow rate remains constant by the action of the negator-spring.

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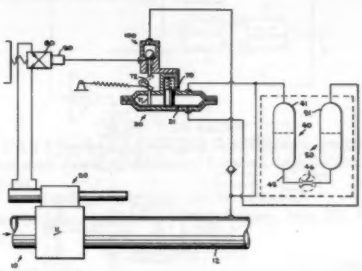
3,794,069

## LINE BREAK CONTROL

Ronald A. Gulick, Houston, Tex., assignor to Research Engineering Company, Houston, Tex.

Filed Nov. 20, 1972, Ser. No. 308,026
Int. Cl. F16k 17/20
U.S. Cl. 137—486 5 Claims



This invention is directed to a system for detecting pressure drops in a flow line, the same being indicative of a line break. Reduced pressure is communicated to one side of a diaphragm. A similar reduction is communicated much more slowly to the other side by virtue of series connected oil reservoirs having an orifice therebetween. The pressure differential on opposite diaphragm sides causes valve closure.

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3,794,070

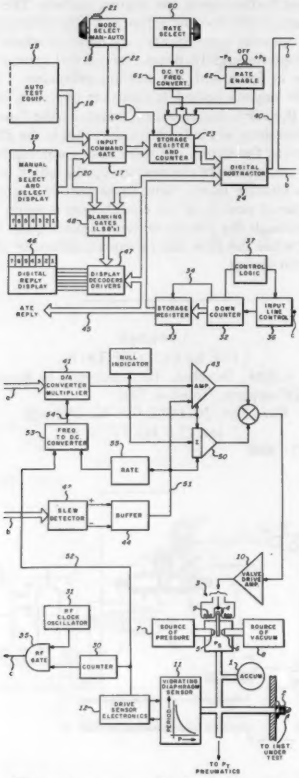
## PRECISION REFERENCE PRESSURE SUPPLY SYSTEM

Charles D. Klem, Phoenix; Robert T. Riall, Scottsdale, and Richard A. Wallace, Phoenix, all of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 20, 1972, Ser. No. 235,954
Int. Cl. G05d 16/00
U.S. Cl. 137—487.5 6 Claims

A closed loop, selectively variable precision pressure reference system for testing pneumatic apparatus comprising all solid state digital control of a precision valve for establishing and maintaining the selected or desired reference pressure as a ratio between a positive pressure and a vacuum, the pressure ratio being sensed by a precision pressure sensor of the vibrating diaphragm type. The desired reference pressure is expressed as a binary word and the output of the pressure sensor is converted to a binary word, these two words being digitally compared and the difference therebetween being

converted to an analog signal for adjusting the valve thereby closing the loop to maintain the selected pressure. The system is also capable of providing a precision pressure rate




reference. The system automatically compensates for the inherent non-linear characteristics of the pressure sensor over its range of operation.

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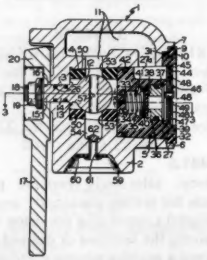
**3,794,071**

## BALL TYPE BRAKE CYLINDER RETAINER VALVE

**Daniel G. Scott, Apollo, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.**

**Filed July 27, 1972, Ser. No. 275,459**
**Int. Cl. F16k** *11/10*
**U.S. Cl. 137—599.2** **12 Claims**



This invention relates to a three-position sealed ball-type brake cylinder pressure retaining valve device, for connection to the exhaust passageway of a railway vehicle brake control valve device. This retaining valve device has a body that is provided at one end with a securing flange. Extending into the body from the other end thereof is a bore that is coaxial with the smaller of a pair of counterbores, the axis of the larger being off-set therefrom. In the larger of these counterbores is disposed a removable cartridge which has formed integral with one end thereof a pair of diametrically arranged arcuate-shaped legs that extend into the smaller counterbore to the end thereof. A pair of diametrically arranged ported resilient arcuate-shaped seal members are disposed in the smaller counterbore between the arcuate-shaped legs and in surrounding sealing relation to a ball-type valve element that has integral therewith a valve stem which extends through the bore in the body for receiving on its outer end a handle manually movable in a plane parallel to the flange selectively to any one of three positions. Extending into the cartridge from its one end is a passageway of small diameter so as to constitute a choke that opens into the smaller of a plurality of coaxial counterbores in one of which is carried an annular valve seat member against which a check valve is normally biased by a spring interposed between the check valve and one end of another of the plurality of counterbores, the check valve thus being arranged in series relation with the choke. The ball-type valve element has therein a plurality of angularly spaced intersecting passageways, one of which is of such size as to constitute a choke, that open at one end at its spherical surface. These passageways of different flow capacity, in cooperation with one another and with either a passageway in the body that at one end opens into the smaller counterbore in this body in alignment with a port in one of the seal members and at the other registers with an arcuate cavity provided in the cartridge and open to the face of the flange via a strainer device, or the check valve, are effective in three respective positions of the ball-type valve element to selectively provide a fast blow-down of brake cylinder pressure to atmosphere, a slow blow-down to a chosen pressure above atmospheric pressure, and a slow blow-down to atmosphere.

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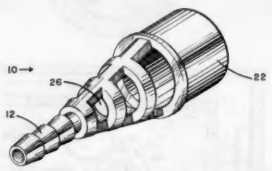
**3,794,072**

## OXYGEN DILUTER DEVICE

**Donald F. Diedrich, Temecula, and John H. Price, La Jolla, both of Calif., assignors to Hudson Oxygen Therapy Sales Company, Temecula, Calif.**

**Filed June 26, 1972, Ser. No. 266,226**
**Int. Cl. F16k** *15/00*
**U.S. Cl. 137—604** **4 Claims**




An improved device for controlling oxygen concentration delivered to an oxygen mask comprises a nozzle portion disposed at one end for attaching an oxygen delivery tube, a hollow gas delivery portion at the opposite end for directing gas to an oxygen mask and a tunnel portion disposed between the nozzle and gas delivery portion having support bars extending between the nozzle and delivery portions and a plurality of spaced arcuate ribs secured along the bars between which ribs are defined a plurality of air entrainment ports through which atmospheric air is drawn for diluting a stream of oxygen passing along the tunnel. Air restriction closure members are secured between the ribs selectively closing one or more of the ports for metering air entrainment and oxygen concentration delivered to the mask.

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**3,794,073**

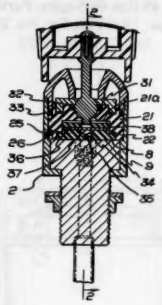
**Patent Not Issued For This Number**

3,794,074

## MIXER TAPS

Horace Watts, Pinner, England, assignor to H. E. D. E. Limited, Middlesex, England

Filed Sept. 20, 1972, Ser. No. 290,495
Int. Cl. F16k 11/00
U.S. Cl. 137—625.4 4 Claims



A mixing valve comprising a chamber having a surface defining a valve seat, hot and cold water inlets opening into said chamber at said seat, a valve member disposed in said chamber and slidably associated with said seat and having passage means therein movable into and out of registry with said inlets, a lever having one end interconnected to the valve member and a journal intermediate the ends mounted in a journal bearing spaced from said seat for swinging movement in a single plane extending normal to said seat so as to move the valve member in a straight path aligned with said single plane and for rotation about the longitudinal axis so as to rotate the valve member about an axis fixed with respect to the valve member and always lying substantially in said single plane, the lever and/or the valve member being guided between opposed parallel plane surfaces lying normal to the seat respectively at opposite sides of said single plane, and at least one sealing ring in engagement with the journal for sealing said journal with respect to said journal bearing to prevent water leaking along the spindle from the chamber to atmosphere.

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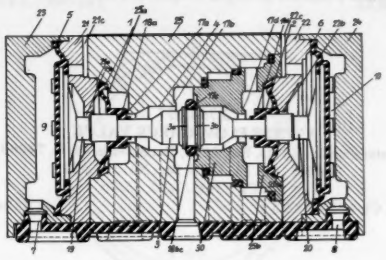
3,794,075

## MULTIWAY VALVE

Kurt Stoll, Schanbacher Str. 48, Esslingen-Hegensberg, and Willy Schwenk, Fuchshofstr. 28, Ludwigsburg, both of Germany

Filed Aug. 3, 1971, Ser. No. 168,680
Claims priority, application Germany, Aug. 5, 1970, 2038846
Int. Cl. F16k 11/02, 31/165
U.S. Cl. 137—625.66 6 Claims

A multiple way valve includes a housing having a central bore and a plurality of passages opening from the outside into the bore. The bore includes a plurality of valve seats between the different passages. A valve member in the shape of a spool carries annular sealing members engageable with the valve seats is floatingly supported within the bore by a support diaphragm at one end and a support diaphgram or a coil spring at the other end. A control diaphragm outside of the support diaphragm forms one wall of a chamber within the housing to which pressure fluid can be admitted. This diaphgram has a boss which is engageable with the spool forming member and actuates it.



One of the diaphragms is constructed as a snap-action diaphragm, so that the valve member will move quickly from one end position to the other.

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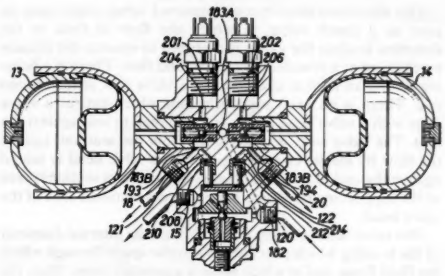
3,794,076

## VALVE DEVICES

Leslie Cyril Chouings, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England

Filed July 28, 1971, Ser. No. 166,662
Claims priority, application Great Britain, Aug. 10, 1970, 38,478/70
Int. Cl. G05d 11/00
U.S. Cl. 137—115 6 Claims



A valve device for controlling the supply of liquid pressure from a pump to two liquid pressure accumulators in a dual line liquid pressure braking system for a vehicle has an inlet port, two outlet ports and a vent port. The inlet port communicates with each outlet port via a respective non-return valve. Communication between the inlet port and the vent port is controlled by a normally closed valve which may be opened by

means responsive directly or indirectly to the pressure at the outlet ports. The pressure responsive means responsive directly to the pressure at the outlet ports may comprise two pistons acting through a common beam which is hinged centrally to a plunger, movement of the plunger being arranged to open the normally closed valve. The valve device may include two fluid pressure responsive electric switches which are responsive to the pressure at a respective one of the outlet ports and which are arranged to operate a warning device.

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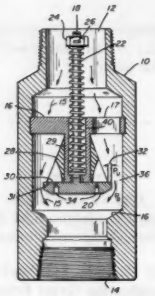
**3,794,077**
**EXCESS FLOW CHECK VALVE**
**Chester Fanshier, P.O. Box 1114, Bartlesville, Okla. 74003**
**Filed Dec. 15, 1972, Ser. No. 315,322**
**Int. Cl. F16k** *17/30, 15/06*
**U.S. Cl. 137—513.3** **3 Claims**



This disclosure describes an improved valve, which may be used as a check valve, in which the flow of fluid in the direction to close the valve, is designed to operate the closure mechanism at a preselected rate of fluid flow. There is a housing having an inlet at one end and a valve seat at the second end. There is an axial support means which carries a valve stem with a valve head at one end, adapted to seal against the seat. The valve stem is urged away from the seat and against the flow by means of a spring, until the valve head is seated against the end of the support means. The cross sectional area of the support means is less than the cross sectional area of the valve head.

The valve head is of less diameter than the internal diameter of the housing which provides an annular space through which the fluid flows, and in which there is a pressure drop. Thus, the unit pressure on the leading, upstream face is higher than the unit pressure on the lower downstream face of the valve head. The upper pressure times the exposed area on the upper surface of the head provides a downward force which is balanced by the sum of the upward forces of the fluid pressure on the lower surface of the head and the spring force. As the fluid flow increases the pressure drop increases and at a selected value of fluid flow the downward force on the valve head will be sufficient to overcome the upward forces and the valve will move downward. This movement provides a space between the lower end of the support means and the upper surface of the valve head and exposes the entire upper surface of the valve head to the upstream pressure which now provides a greater downward force on the valve head, causing it to rapidly close, shutting off all fluid flow.

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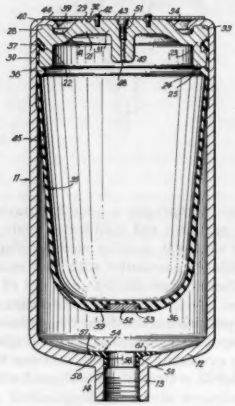
**3,794,078**
**PRESSURE VESSEL**
**Jacques H. Mercier, 49 Rue de Naples, Paris, France**
**Filed Mar. 15, 1972, Ser. No. 234,760**
**Int. Cl. F16l** *55/00*
**U.S. Cl. 138—30** **4 Claims**



This invention relates to a pressure vessel and more particularly to a pressure accumulator of the type having a rigid container having a port at one end for flow of fluid therethrough. A deformable partition in the form of a bladder is positioned in the container and is charged with gas under pressure. The closed end of the bladder has an axially mounted button or valve member which will move against the periphery of the container port to close the latter when the bladder is inflated. The button and the periphery of the port define two elements of a valve, at least one of which has a resilient surface preferably of rubber to reduce the impact when the two elements are brought into engagement for closure of the valve.

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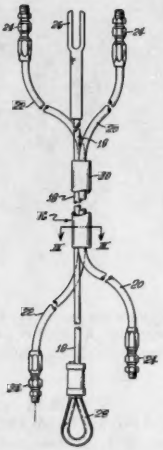
**3,794,079**
**COMBINATION STRENGTH/HYDRAULIC CABLE**
**Kenneth R. Fishel, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
**Filed Aug. 27, 1971, Ser. No. 175,525**
**Int. Cl. F16l** *55/00*
**U.S. Cl. 138—103** **1 Claim**

A combination strength/hydraulic cable including a load carrying cable having load carrying end fittings; and a pair of

flexible hydraulic hoses, each hydraulic hose having end fittings. The load carrying cable and the pair of hydraulic



hoses are bonded integrally within an elastomeric jacket. The end fittings extend from the elastomeric jacket for connection to respective components.

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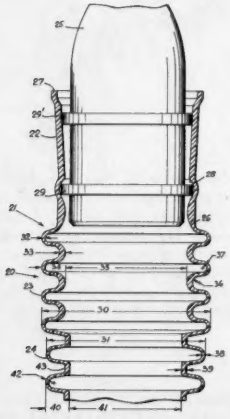
**3,794,080**
**CORRUGATED FLEXIBLE HOSE**

**Paul O. Huston, Montville; Hermann Karl Seipp, Nutley, and Arduino E. Riuli, Wayne, all of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.**

**Filed Aug. 18, 1972, Ser. No. 281,914**
**Int. Cl. F16l *11/00***
**U.S. Cl. 138—121** **16 Claims**

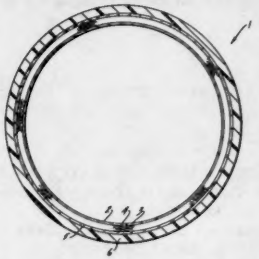


A corrugated flexible hose of a predetermined length of walled hollow tubular material. The wall includes convolutions of alternate crests and troughs along a substantial portion of its length. The convolutions adjacent at least one end of the wall are dimensionally varied from the remainder of the convolutions of the wall to thereby provide a stiffer portion at least at one end of the hose to facilitate connection to a member while retaining flexibility of the hose.

**3,794,081**
**FIBER REINFORCED TUBULAR ARTICLE HAVING ABRASION RESISTANT LINER**

**James T. Fiser; Robert M. Jackman, and Ray R. James, all of Little Rock, Ark., assignors to A. O. Smith-Inland Inc., Milwaukee, Wis.**

**Filed May 5, 1972, Ser. No. 250,767**
**Int. Cl. F16l *9/04***
**U.S. Cl. 138—141** **3 Claims**



A tubular article having an internal abrasion and corrosion resistant liner and a method of forming the same provides an inner layer of cheesecloth impregnated with an epoxy resin with the resin adapted to form an outer layer on the cheesecloth. A layer including a plurality of ceramic spheres each having at least a partial surface coating of metal are secured to the cheesecloth through the bonding provided by the metal coating and resin and are maintained in a confined condition to form the inner liner, such as by an outer layer of cheesecloth impregnated with an epoxy resin which surrounds the layer of ceramic spheres and resin. A plurality of fiber glass filaments impregnated with thermosetting resin surround the inner liner with the entire composite cured to form the fiber reinforced pipe.

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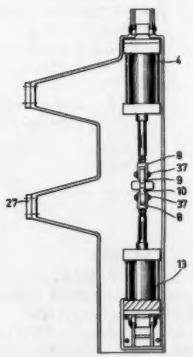
**3,794,082**
**ARRANGEMENT FOR SHED FORMATION**

**Heinz Kuster, Ljungby Gard 570 82, Malilla, and Bjorn Brorsson, Furugatan 7c 590 00, Vimmerby, both of Sweden**

**Filed Jan. 4, 1972, Ser. No. 215,340**
**Int. Cl. D03c *13/00***
**U.S. Cl. 139—55** **7 Claims**



A shed formation mechanism arrangement comprising a plurality of healds, an impulse counter controlled by the timing of the weft carrier, said counter continuously produces

output impulses, a preset selector for determining the repeat of a weaving pattern, a reversing switch means for feeding said impulses, contact means, a pair of knives and a shaft for each of the said healds, a piston and cylinder coupling means for each of said knives, said contact means upon receiving the impulses generages a reciprocating movement to said coupling means to effect a mechanical coupling between one of said knives and said shaft, a guide and connecting means for coupling said shaft to its corresponding heald, a piston and cylinder drive means for each of said knives, and said drive means reciprocates said knives to move the healds to their shed positions.

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**3,794,083**

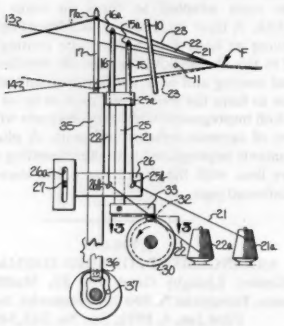
**SELVAGE FORMING APPARATUS FOR LOOMS**

**Paul Anthony Czelusniak, Jr., Eden, N.C., assignor to Fieldcrest Mills Inc., Eden, N.C.**

**Filed Apr. 28, 1972, Ser. No. 248,625**

**Int. Cl. D03d** *47/40*

**U.S. Cl. 139—54** **7 Claims**



First, second and third thread guides, with respective first, second and third selvage threads extending therethrough, are successively arranged rearwardly of the reed, and means are provided for oscillating the first and second thread guides about a substantially vertical axis in timed relation to substantially vertical reciprocation of the third thread guide rearwardly thereof so as to cross the first and second threads with each other and position them astraddle the third thread.

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**3,794,084**

**RAIL BEARING FOR A WARP STOP MOTION**

**Gianfrance De Faveri, Zurich, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Hargen, Switzerland**

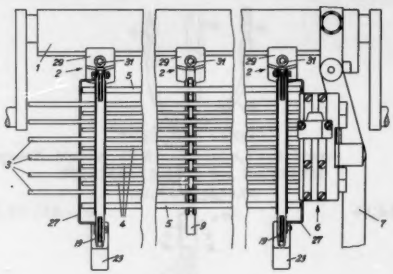
**Filed June 16, 1972, Ser. No. 263,411**

**Claims priority, application Switzerland, June 18, 1971, 8974/71**

**Int. Cl. D03d** *51/28*

**U.S. Cl. 139—369** **3 Claims**

A rail bearing for a warp knock-off action in a power loom is provided with a substantially U-shaped base body in which is inserted an upright guide plate provided with spaced parallel slots for guide rails, while an upright distance plate mounted



on top of the guide plate has parallel slots for contact rails or toothed rails, respectively. A cover is used for clamping the distance plate and the guide plate to the base body.

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**3,794,085**

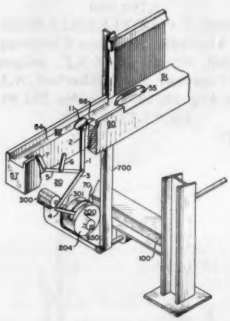
**SHUTTLE BOXING METHOD AND APPARATUS**

**William J. Stephens, Bedford, Mass., assignor to Noxxe, Inc., Bedford, Mass.**

**Filed Feb. 28, 1972, Ser. No. 229,697**

**Int. Cl. D03d** *49/54, 49/24, 49/38*

**U.S. Cl. 139—185** **10 Claims**



There is disclosed a shuttle boxing method and apparatus whereby loom shuttles, upon completion of their traverse of the lay beam, are rapidly and smoothly decelerated without deleterious rebound. The deceleration method and apparatus of the invention serve to employ the kinetic energy of the flying shuttle in overcoming the inertia of a flywheel at rest. In the picking or firing cycle embodiment of the invention the energy of the spinning flywheel is imparted to the boxed shuttle.

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**3,794,086**

**APPARATUS FOR FORMING A SEAL-LESS TYPE JOINT IN OVERLAPPED FLAT STRAPPING**

**Marchand B. Hall, Olympia Fields, and Carl E. Krack, Evergreen Park, both of Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.**

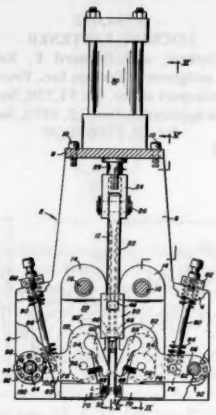
**Filed Aug. 30, 1972, Ser. No. 284,841**

**Int. Cl. B21f** *9/02*

**U.S. Cl. 140—93.2** **4 Claims**

Apparatus includes a pair of opposed jaws mounted at one end for pivotal movement toward and away from each other. Mating notches are provided on the opposing faces of the jaws

remote from their pivoted ends for forming a fixed die for receiving overlapped flat strapping. A punch is disposed for reciprocal movement between the opposed edges of the jaws toward and away from the fixed die formed by the notched portions of the jaws. The punch is shaped so as to form interconnecting tabs in the overlapped portion of the flat strapping resting on the fixed die. A cutter is mounted on the punch for movement therewith which serves to cut the length of



strapping proximate to the source of flat strapping. A linkage system is provided connected with each jaw which is actuatable by the punch as it travels away from the fixed die to open the jaws to release the overlapped portions of the strapping after the punch has joined them together and the cutter has cut the strapping from its source. Spring means are provided connected with the linkage system to constantly urge the jaws toward each other. The apparatus also includes a micrometer adjusting means to adjust the clearance between the jaws.

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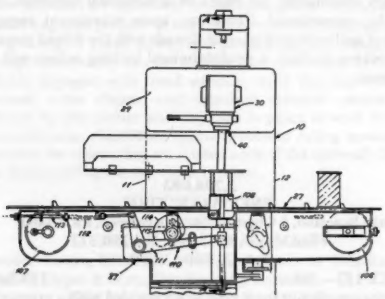
**3,794,087**

**MACHINE FOR CONTINUOUSLY FILLING MEASURED QUANTITIES OF MATERIALS**

**Eduardo Victor Spano; Otilia Sueiro; Oscar Pedro Gonzalez, and Noem Mabel Campiani, all of c/o Quintana 689, Villa Ballester, Buenos Aires, Argentina**

**Filed Dec. 14, 1970, Ser. No. 97,925**
**Int. Cl. B65b *43/42***
**U.S. Cl. 141—131** **8 Claims**



Improved machine for continuously filling measured quantities of materials, such as food products, into containers; comprising a feeding or dosing mechanism with a pair of receiving members having predetermined volumes for the measured material quantities, preferably in the form of cylinders with reciprocable plungers therein, and means for alternately filling the receiving members by way of a valve which has a partition-shaped valve element therein; means for transporting the containers to a filling position, and for elevating them one by one, for receiving the dosed materials from a discharging means; and control means for providing synchronized operation of the machine in an orderly and continuous manner.

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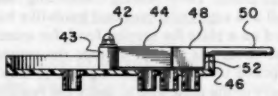
**3,794,088**

**CONTAINER FILLING DEVICE**

**Pruitt Harvey, Dallas, Tex., assignor to Chester S. Hartman, Jr., Dallas, Tex.**

**Filed Dec. 13, 1971, Ser. No. 207,420**
**Int. Cl. B65b *1/04, 1/10***
**U.S. Cl. 141—237** **1 Claim**




An apparatus for simultaneously filling multiple containers such as glasses with ice and the like is disclosed. A distributor tray having a flat bottom and upstanding side walls is provided with a plurality of circular openings in the bottom. Surrounding each opening is a downwardly extending spout which is adapted to be placed into containers arranged on a lower base tray. The lower base tray may be a conventional flat, oval tray or preferably may have indentations conforming to the shape of the bottom of the containers to properly align and index the glasses to be filled with the spouts in the upper tray. In one embodiment a paddle is affixed to the distributor tray and movable therein to assist in distributing the ice among the filler spouts.

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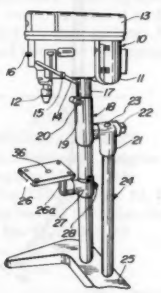
**3,794,089**

**POSITIONING COUPLING FOR A TABLE BRACKET**

**Glenn B. Morse, 321 Fountain N. E., Grand Rapids, Mich. 49503**

**Filed Aug. 28, 1972, Ser. No. 284,417**
**Int. Cl. B27c *9/02***
**U.S. Cl. 144—1 C** **3 Claims**



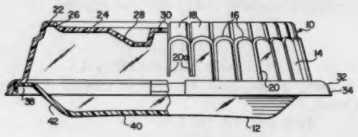
A machine having a cylindrical beam and a support capable of placing the beam horizontally, and rotatably adjustable in this position, is provided with a coupling interengaging a table bracket with the support to lock the bracket against rotation about the axis of the beam. The beam is itself rotatably adjustable with respect to the support about the beam axis. The coupling permits the bracket to be locked in a selected position while the beam is angularly adjusted about its own axis for various purposes.

3,794,090

## COVERED CONTAINER FOR SERVING FOOD

Nicholas D. Commisso, Victor, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 14, 1972, Ser. No. 271,864
Int. Cl. A45c/00; B65d/00
U.S. Cl. 150—.05 8 Claims



A thin gauge plastic cover having reinforcing ribs in its annular side wall and top, and a recessed knob-like handle at its top is disposed on a plate for serving food, for example, in institutions. The cover has a lower arcuate rim provided with a plurality of spaced inwardly projecting lugs to lock the cover to the periphery of the plate and to space the remainder of the rim of the cover slightly above the periphery of the plate to allow for venting from the interior of the container. The lugs and reinforcing ribs are arranged to prevent covers from sticking to each other when a plurality of covers are nested together.

3,794,091

## STERILE SHEATH FOR SURGICAL ILLUMINATOR

Robert A. Ersek; Donald E. Wall, and Michael C. Garity, all of Minneapolis, Minn., assignors to Med General, Inc., Minniapolis, Minn.

Filed Oct. 7, 1971, Ser. No. 187,295
Int. Cl. B65d *65/16, 65/32;* A61b *1/06*
U.S. Cl. 150—52 R 5 Claims

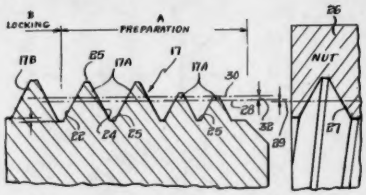
A sterile sheath for enclosing certain surgical illuminating lamp structures having elongated light transmitting shafts with a light transmitting lens means disposed at the tip end of the light transmitting shaft. The sheath means of the present invention comprises an elongated tubular sheath having a closed tip at one end thereof and an opening at the other end thereof, the tubular sheath having sufficient length to cover that portion of the light transmitting shaft having a sterile requirement. The sheath is provided with a light transmitting tip at the closed end and has a pair of generally axially extending slots formed adjacent the open end to form a pair of grasping ears. One of the axially extending slots has a length in substantial excess of the other in order to provide the grasping ears with substantial asymmetry.

3,794,092

## LOCKING FASTENER

Raymond H. Carlson, and Bernard F. Reiland, both of Rockford, Ill., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 91,730, Nov. 23, 1970, abandoned. This application Nov. 12, 1971, Ser. No. 198,146
Int. Cl. F16b *39/30*
U.S. Cl. 151—22 21 Claims




A locking screw arrangement and fastener member are disclosed which provide for predictability and control of the locking action attained. In addition, there is disclosed a novel type of locking thread configuration wherein the leading or following flank of one or more thread turns on the fastener are bulged outwardly in an axial direction, with the opposite flank depressed, whereby said bulged flank will engage the corresponding flank of the female member to produce flank-to-flank interference. In order to obtain said predictability and control, said locking arrangement employs an internally threaded female member having a thread configuration formed within industry accepted tolerances, which female member is engaged with an externally threaded fastener having a construction which eliminates any variables due to the tolerance encountered in the thread form of the female member that adversely effect the locking action. In this regard, the threaded portion of the fastener includes a preparation section and a locking section, the thread turns and the preparation section being such as to reshape and size the internal thread of the female member upon engagement therewith, thereby eliminating the effect of dimensional variables that may be encountered. Therefore, upon subsequent engagement of said reshaped internal threads with the thread turns of the locking portion, a predetermined locking action will be obtained.

3,794,093

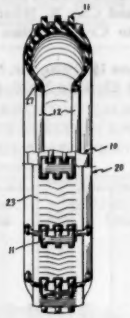
## PNEUMATIC TIRE

Lorenzo Boscaino, 1 Chestnut St., Norristown, Pa. 19401

Filed May 4, 1972, Ser. No. 250,322
Int. Cl. B60c *19/00*
U.S. Cl. 152—208 15 Claims

A pneumatic tire for a vehicle is provided with a pressurizable inner casing having luglike members on the peripheral surface thereof, and a non-pressurizable outer casing having openings through the peripheral portion thereof and adapted to fit over the inner casing, with the luglike members of the inner casing fitting through the openings and normally

protruding beyond the outer surface of the outer casing but depressible flush therewith when the members meet the



roadbed by the normal pressure due to the weight of the vehicle. The resulting multi-purpose tire is advantageous for use on dry roads as well as slippery roads.

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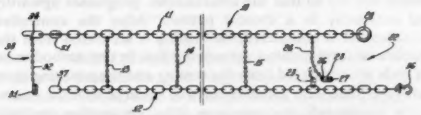
**3,794,094**
**METHOD AND APPARATUS FOR STORING AND ATTACHING TIRE CHAINS**
**Joseph L. Wosser, Jr., 1855 Sierra Sage Ln., Reno, Nev. 89502**
**Filed Aug. 11, 1972, Ser. No. 279,851**
**Int. Cl. B60c** *27/02*
**U.S. Cl. 152—213** **11 Claims**



A system for storing and attaching a tire chain to a vehicle wheel is provided in which each chain is stored in a spring clip carrier constructed to receive and removably hold each of the cross chains which extend at spaced intervals between a pair of sidewall chains of the tire chain. The carrier has a relatively flat elongate shape, open at one end to receive the cross chains and is provided with a slight longitudinally arcuate configuration for conforming to the outer circumference of the tire. Installation is initiated by anchoring the end of the tire chain adjacent an open end of the spring clip carrier to the ground engaged portion of the tire by means of a special cross chain fitting. A crank tool of special construction is employed to impel the carrier around the tire circumference while it is slidably engaged with tread surfaces such that each of the retained cross chains and attached sidewall chains are released by the carrier and disposed in place around the tire circumference. Additional specially formed fitting means are provided for connecting associated ends of the sidewall chains and thus securing the tire chain in place.

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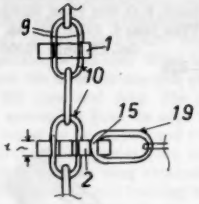
**3,794,095**
**TIRE CHAIN WITH CLEATS**
**Theodor Insam, Kitzbuhel, Austria, assignor to Reid-Kettenfabrik Rieger & Dietz, Wurtemberg, Germany**
**Filed Jan. 24, 1972, Ser. No. 219,990**
**Claims priority, application Austria, Jan. 25, 1971, 567**
**Int. Cl. B60c** *27/04*
**U.S. Cl. 152—239** **10 Claims**

Certain links of a tire chain are inserted into and/or interconnected by cleats in the form of flat or annular bodies provided along one edge with a plurality of indentations gripping parts of the same or different chain links. The cleat bodies ex-




tend generally transversely to the main direction of the engaged chain to increase the traction exerted by the tire carrying the chain.

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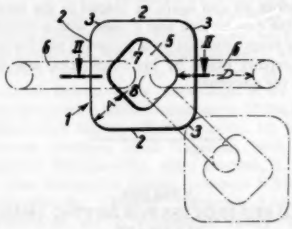
**3,794,096**
**WEB LINK FOR TIRE ANTI-SKID CHAINS**
**Anton Muller, Unterkochen, Germany, assignor to Eisen-und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany**
**Filed Mar. 23, 1972, Ser. No. 237,394**
**Claims priority, application Germany, Mar. 24, 1971, 92114201**
**Int. Cl. B60c** *27/06*
**U.S. Cl. 152—243** **13 Claims**



A reversible web link for anti-skid tire chains which has pairs of approximately parallel road engaging and/or tire engaging surfaces and also has a receiving opening for receiving connecting links, all outer peripheral surfaces of said link forming road and/or tire engaging surfaces, being substantially symmetrically arranged about the substantially axis symmetrical receiving opening.

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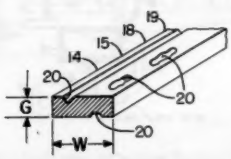
**3,794,097**
**PNEUMATIC TIRE**
**Guy Kind, Bellevue, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Continuation of Ser. No. 114,922, Feb. 12, 1971, abandoned. This application Nov. 2, 1972, Ser. No. 303,164**
**Int. Cl. B60c** *9/18*
**U.S. Cl. 152—356** **5 Claims**



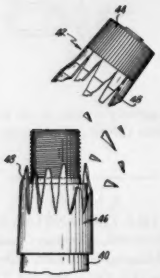

A pneumatic tire with flat wire cords in the carcass plies and breaker strips for annularly reinforcing the tire.

3,794,098

## TIRE REPAIR OR INSTALLATION METHOD AND SEAL DEVICE THEREFOR

Michael A. Versen, P.O. Box 1848, Morgan City, La. 70380

Filed June 5, 1972, Ser. No. 259,942
Int. Cl. B60c 29/00
U.S. Cl. 152—428 8 Claims



The valve stem of an assembled and inflated pneumatic tire and wheel assembly is equipped with a frangible seal, the seal being so constructed and arranged that such must be destroyed before air can again be placed in the assembly. In the method the destructible seal is used with a record system to ensure the proprietor that he is receiving pay for tire installations and repairs made by his employees, and to give a guarantee to the customer.

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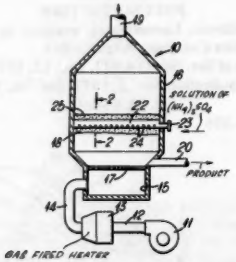
3,794,099

## FLUIDIZED BED PROCESS FOR DRYING AMMONIUM SULPHATE

Neophytos Ganiaris, 3671 Hudson Manor Terr., Riverdale, N.Y. 10463

Filed June 14, 1971, Ser. No. 152,887
Claims priority, application Great Britain, June 13, 1970, 28721/70
Int. Cl. B01d 1/16; F26b 3/12
U.S. Cl. 159—48 R 1 Claim



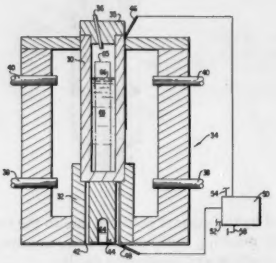

A nozzle introducing a spray into a fluidized bed is positioned a few inches below the top of the expanded bed to minimize the production of dust and to reduce the formation of lumps of material on the surfaces of the nozzle.

3,794,100

## METHOD OF MAKING A BILLET SUITABLE FOR MANUFACTURING INTO A SUPERCONDUCTOR

Jan W. Raymond, and Clay N. Whetstone, both of Denver, Colo., assignors to Cryomagnetics Corporation, Denver, Colo.

Filed June 18, 1970, Ser. No. 47,390
Int. Cl. B22d 27/20, 19/00
U.S. Cl. 164—57 8 Claims



A plurality of rods are assembled in a predetermined configuration to form a core which is surrounded by a molten matrix metal within a heated crucible. The temperature of the thusly charged crucible's upper portion is maintained above the matrix metal's melting point. In this respect, as the heat is applied to the top of the melt, the crucible is maintained in a hot environment while the bottom of the crucible is centrally chilled. In this manner the charge is solidified from the bottom toward the top so that the solidification progresses upwardly and outwardly in a conical pattern. After the controlled solidification is completed the casting is separated from the crucible to form a cored extrusion billet. In one embodiment the rods are separated from the casting and the resulting open holes are filled with superconductive material to form a composite superconductor extrusion billet. In another embodiment the rods themselves are made of a superconductive material so as to eliminate the step of separating the rods from the casting.

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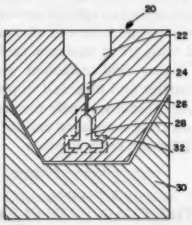
3,794,101

## METHOD OF CASTING METALS IN METAL MOLD

Jean Robert Frederick, 3130 State Rd., Ashtabular, Ohio 44004

Filed May 17, 1971, Ser. No. 143,907
Int. Cl. B22d 21/02, 23/06, 29/00
U.S. Cl. 164—68 5 Claims



A process for casting an exotic alloy in a metal mold comprising a relatively easily machined steel mold wherein the mold is prefabricated from component parts having those surfaces which are exposed to the cast metal being machined and finished by polishing. The mold formed is characterized by the

unusually complex forms that are possible and is preferably removed partially by rough machining and the remainder being dissolved by an acid which will not attack the cast metal. The casting is recovered in a precise highly finished form requiring no further finishing process.

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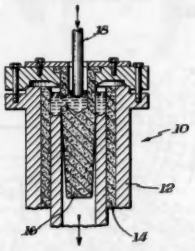
3,794,102

## METHOD AND APPARATUS FOR CONTINUOUSLY CASTING NON-FERROUS METALS IN A GRAPHITE-GLASSY SUBSTANCE MOLD

**Kurt Binder, Giessen, Germany, assignor to Berkenhoff & Co., KG., Kinzenbach, Germany**

**Filed Mar. 16, 1971, Ser. No. 124,719**
**Int. Cl. B22d *11/02***
**U.S. Cl. 164—82** **10 Claims**




Graphite dies or molds used for casting metals contain glasses or fluxes as a lubricant, which softens or melts below the solidification temperature of the metal melt.

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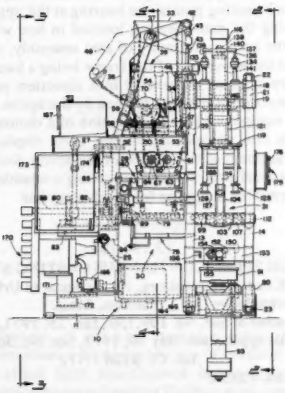
3,794,103

## MATCHPLATE MOLDING MACHINE

**Robert G. Shields, Chagrin Falls; Warren A. Blower, and Edmond K. Hatch, both of Brecksville, all of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio**

**Filed Jan. 7, 1972, Ser. No. 216,013**
**Int. Cl. B22c *17/00***
**U.S. Cl. 164—182** **22 Claims**



A matchplate foundry molding machine having a fill station and an adjacent molding station with a cope, matchplate, and drag assembly adapted to be indexed between such stations. The assembly in the fill station is supported for inversion so that the drag may be inverted and filled with sand. After a bottom board is inserted the assembly is reinverted and the cope filled with sand. The assembly is then indexed into the molding station which includes a vertically movable table, a drag support, a cope support, a fixed matchplate support, and a squeeze head incorporating a jolt ram. When the sand filled assembly is in position, the table elevates and simultaneously jolts and squeezes the cope and drag. The table is then lowered to draw the matchplate from the cope which is held against the squeeze board by its support and when the drag and matchplate reach the matchplate support, the matchplate is drawn from the drag with the drag continuing to coring height with the matchplate alone now indexing back to the fill station. The drag support then elevates the drag with the table following to close the drag against the cope, slight further elevation lifting the flasks free of the sand cakes held by the squeeze head which are then supported on the table. The table lowers with the booked cope and drag sand cakes thereon, the drag support following with the drag, with the cope remaining elevated. When the drag is clear, the matchplate is again indexed into the molding station to be reassembled with the cope and drag flasks. The assembly is then indexed to the fill station for filling and the booked cand cakes are pushed out of the machine.

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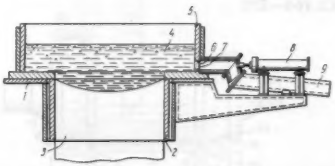
3,794,104

## MOULD FOR ELECTROSLAG REMELTING FURNACE

**Boris Izrailevich Medovar, bulvar Leis Ukrainki, 2, kv. 8; Jury Fedorovich Alferov, bulvar Lepse, 29, kv. 64; Grigory Bentsionovich Schupak, ulitsa Chudnovskogo, 7, kv. 61; Valery Evgenievich Lanevsky, ulitsa V.Kuchera, 2a, kv. 8; Vitaly Grigorievich Dykan, ulitsa Ushinskogo, 8, kv. 29; Mikhail Elevich Berezovsky, ulitsa Lomonosova, 21/14, kv. 54; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Lev Andreevich Shuruev, ulitsa Gagarina, 10/2, kv. 7; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5, all of Kiev; Kim Moiseevich Khasin, prospekt K.Marxa, 35, kv. 17, Novosibirsk; Vladimir Ivanovich Lugovsky, ulitsa Pamirskaya, 48, kv. 70, Novosibirsk; Valery Vasilievich Salmin, ulitsa Zorge, 95, kv. 69, Novosibirsk; Vilen Fedorovich Marjuschenko, ulitsa Televizionnaya, 11, kv. 7, Novosibirsk; Fedor Fedorovich Shaburov, ulitsa Rimskogo-Korsakova, 4a, kv. 64, Novosibirsk; Georgy Vasilievich Tamozhnikov, ulitsa Vertkovskaya, 14, kv. 4, Novosibirsk; Viktor Andreevich Popov, ulitsa Andreevskaya, 11, kv. 2, Kiev, and Gennady Mikhailovich Semin-Vadov, ulitsa Butyrskaya, 86 B, kv. 10, Moscow, all of U.S.S.R.**

**Filed Sept. 27, 1972, Ser. No. 292,803**
**Int. Cl. B22d *27/02***
**U.S. Cl. 164—252** **4 Claims**



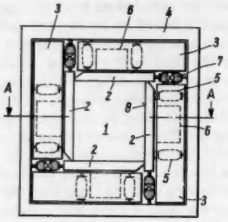

A mould for an electroslag remelting furnace fitted with a slag hole which is closed with a plug manufactured of a refractory material having high chemical resistance against attack by the slag. A preferred refractory material is graphite, having a specific gravity less than that of the slag.

3,794,105

## OSCILLATING WALL ARRANGEMENT FOR A CONTINUOUS CASTING MOLD

Wilhelm Voss, Dortmund-Syburg, Germany, assignor to Demag AG, Duisburg, Germany

Filed June 1, 1971, Ser. No. 148,631
Int. Cl. B22d 27/08
U.S. Cl. 164—260 11 Claims



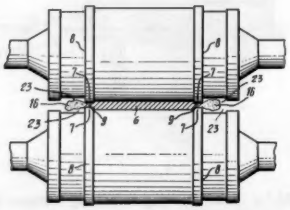
Separate wall plates disposed perpendicularly to one another and with a seal between the abutting surfaces of the wall plates, form the mold cavity in a continuous casting mold. Each wall plate has a device for oscillating it in the radial direction of the mold cavity and another device for oscillating it in the plane of its contacting surface with the casting passing through the mold cavity. The wall plates are enclosed by a frame with abutment strips extending between the frame and the outer surface of the plates. Further, elastic elements are articulated to and extend between the wall plates and the frame. The elastic elements are adjustable for adapting to the tapering action of the casting as it moves through the mold.

3,794,106

## PLANT FOR PRODUCING A METAL BAND FROM A MELT

Vladimir Vasilievich Barsukov, ulitsa Bogatogo, 39/41, kv. 24; Savely Leonidovich Burakov, Treugolny pereulok, 13, kv. 23; Vladimir Vissarionovich Grebennikov, ulitsa R.Ljuxemburg, 4, kv. 12; Petr Georgievich Kalashnikov, ulitsa 25 Chapaevskoi divizii, 10, korpus 2, kv. 23; Miron Vasilievich Krasnov, doroga Kotovskogo, 191, kv. 5; Alexandr Yankelevich Kuperman, ulitsa Tomasa, 4, kv. 9; Evgeny Emelyanovich Mikotin, ulitsa Gaidara, 37, kv. 12; Evgeny Grigorievich Nikolaenko, ulitsa Lastochkina, 9, kv. 6; Alexandr Nikolaevich Stepanov, ulitsa Sverdlova, 97, kv. 68; Georgy Grigorievich Tsarev, ulitsa Bogatogo, 39, kv. 9; Grigory Abramovich Yarovinsky, Treugolny pereulok, 13, kv. 14, and Dolya Iosifovich Yassky, ulitsa Zaslavskogo, 5, kv. 6, all of Odessa, U.S.S.R.

Filed Nov. 3, 1971, Ser. No. 195,191
Claims priority, application U.S.S.R., May 19, 1971, 1652352
Int. Cl. B22d 11/06
U.S. Cl. 164—277 2 Claims



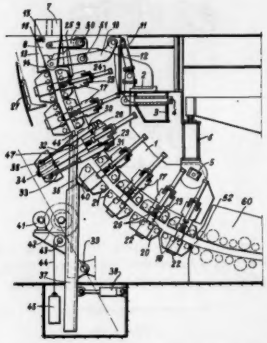
A metal band producing plant in which there is provided rotating rolls for crystallizing molten metal into a band, with said rolls having a crystallizing zone which is limited by annular projections whose height is less than half the thickness of the crystallizing band and which zone is located at such a distance from the roll ends as to ensure a minimum relative deformation of the rolls in the crystallizing zone.

3,794,107

## PLURAL SEGMENTED GUIDING ASSEMBLY FOR A CONTINUOUS CASTING

George Bollig, Buderich; Horst Grothe, Kaarst, and Josef Eisen, Osterath, all of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed July 14, 1972, Ser. No. 272,065
Claims priority, application Germany, July 17, 1971, 2135860
Int. Cl. B22d 11/12
U.S. Cl. 164—282 9 Claims



A continuous casting plant consisting of at least one assembly comprising a supporting frame, a mold and a plurality of following guiding segments forming an arcuate apron attached to the frame. The segments are movable out of alignment with the apron in a direction away from the frame. The frame is disposed on the inside of the arcuate path formed by the apron and supported by the foundation structure of the plant at two bearing points, the bearing at the upper end of the frame being the main bearing located in line with a vertical through the center of gravity of said assembly, and the other bearing at the lower end of the frame being a loose bearing affording freedom of movement in a direction parallel to the longitudinal axis of the path formed by the apron. There is also provided equipment for the reception of a dummy bar and introducible into an opening formed upon displacement of at least one segment at the outside of the apron. Such equipment comprises a deflectably mounted casing containing a telescopically extendable magazine for the dummy bar.

3,794,108

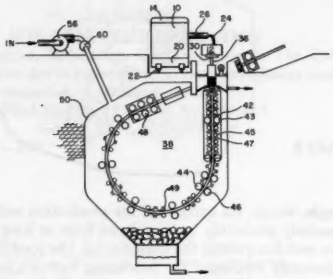
## HIGH SPEED CONTINUOUS CASTING SYSTEM

Valentin Koump, Greensburg, Pa., assignor to Urban Reclamation Technologies, Inc., Waltham, Mass.

Continuation of Ser. No. 109,139, Jan. 25, 1971, abandoned. This application May 30, 1973, Ser. No. 365,071
Int. Cl. B22d 11/12
U.S. Cl. 164—283 S 7 Claims

A continuous casting system for molten steel involving (1) a high cooling capacity, low friction mold characterized by a reticulated skirt and liquid sprays for heat removal from the lower portion of the mold, (2) an intermediate pressure chamber over the spray-cooled part of the mold, (3) an underground structure that defines a pressure chamber, (4) a

sequence of idler and pinch rolls therewithin defining a path for a continuously advancing billet that solidifies within the underground pressure chamber, and (5) a gaseous medium within the upper and lower pressure chambers at greater than atmospheric pressure. The high cooling capacity, low friction



mold and higher than atmospheric pressure of the gaseous medium in the upper and lower chambers increase frozen skin strength and decrease stresses in the frozen skin, by reducing frictional forces and neutralizing the metallostatic pressure of the molten steel within the billet and hence permit casting of billets and slabs at unusually high casting speeds.

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**3,794,109**

**ROTARY HEAT EXCHANGERS**

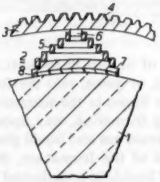
**John Oliver Philip Hughes, Princes Risborough, England, assignor to British Leyland Truck and Bus Division Limited, Leyland, Lancashire, England**

**Filed May 15, 1972, Ser. No. 253,193**

**Claims priority, application Great Britain, June 11, 1971, 27612/71**

**Int. Cl. F28d *19/00***

**U.S. Cl. 165—8** **4 Claims**



A heat-exchanger of the kind having a rotary disc-type matrix that comprises a foraminous core of ceramic material arranged to effect heat transference between segregated streams of gaseous heat-exchanging fluids; has an annular gap between the periphery of the ceramic disc of the rotary matrix and a surrounding coaxial metallic drive-ring; the annular gap containing radially-disposed compression springs spaced around the periphery of the disc and serving to transmit drive from the drive-ring to the ceramic disc.

**3,794,110**

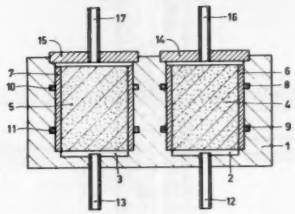
**HEAT EXCHANGER AND METHOD OF MANUFACTURING THE SAME**

**Adrianus Petrus Severijns, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 14,555, Feb. 26, 1970, abandoned. This application May 15, 1972, Ser. No. 253,360**

**Int. Cl. F28f *1/40***

**U.S. Cl. 165—164** **6 Claims**



A heat exchanger comprising a readily heat-conducting block of material having at least one chamber, a gas-permeable filling mass in said chamber, the mass consisting of particles of readily heat-conducting material sintered together with a layer of a readily heat-conducting material provided on an outer circumferential surface of the mass, and a soldered joint provided between the layer and the inner wall of the chamber in at least one zone extending throughout the circumference of the filling mass.

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**3,794,111**

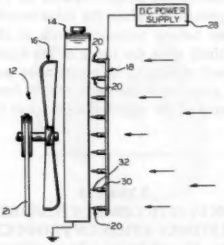
**COOLING APPARATUS FOR HEAT EXCHANGERS**

**Oscar C. Blomgren, Sr.; Oscar C. Blomgren, Jr., both of Lake Bluff, and Felix J. Lyczko, Lake Forest, all of Ill., assignors to Inter-Probe, Inc., North Chicago, Ill.**

**Filed Apr. 8, 1971, Ser. No. 132,280**

**Int. Cl. F28f *13/16***

**U.S. Cl. 165—1** **6 Claims**



To improve the coefficient of heat transfer between the surfaces and the heat exchange media of heat exchangers, such as automobile radiators, steam condensers, and steam boilers. Conductive probes or conductors are energized with a low power, low current high DC potential and spaced from the surfaces a distance slightly greater than the distance at which arcing occurs while the surfaces are grounded to generate an electrostatic field.

**3,794,112**

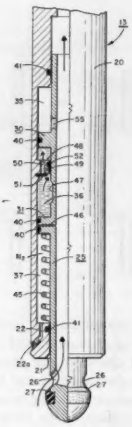
**SURFACE CONTROLLED SUBSURFACE SAFETY VALVE**

**Tom H. Hill, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.**

**Filed Oct. 2, 1972, Ser. No. 294,399**

**Int. Cl. E21b *43/00***

**U.S. Cl. 166—64** **17 Claims**



A surface controlled subsurface safety valve is positioned in a well production tubing and an adjustable choke is installed in the surface production tubing. The safety valve is operated by the absolute pressure of the production fluids in the well tubing. The adjustable choke is controlled by a timer which periodically cycles the choke to reduce the flow area available for production of well fluids for a predetermined short period of time. The reduction in flow area causes a corresponding build up of pressure in the surface tubing which is transmitted down the well tubing to the subsurface valve. Biasing means urges the valve to its closed position while tubing pressure urges the valve to its open positions. During normal well flowing conditions the force of the tubing pressure is less than the force of the biasing means and the valve, while remaining fully open is moved by the biasing means towards its closed position. Such movement is retarded by a dash pot arrangement in the valve. Means are provided in the valve to bypass the dash pot and cause rapid closure of the valve when the valve has reached a predetermined point towards its closed position. Under normal operations before the valve reaches the point of rapid closure the tubing pressure force at the valve is increased substantially over the force of the biasing means and the valve is moved rapidly to its initial open position. The increase in tubing pressure at the valve results from reducing the flow area by means of the adjustable choke in the surface tubing.

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**3,794,113**

**COMBINATION IN SITU COMBUSTION DISPLACEMENT AND STEAM STIMULATION OF PRODUCING WELLS**

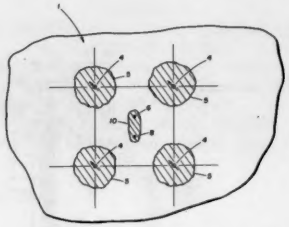
**Lloyd K. Strange, Grand Prairie, Tex., assignor to Mobil Oil Corporation, New York, N.Y.**

**Filed Nov. 13, 1972, Ser. No. 306,131**

**Int. Cl. E21b *43/24***

**U.S. Cl. 166—245** **6 Claims**

This specification discloses a method of producing hydrocarbons from a hydrocarbon-bearing formation penetrated by a pattern of wells including at least one injection well and two production wells spaced relatively close one to the other. The production wells are stimulated by heating the formation to form a heated zone about the production wells, for example, by injecting steam via the wells into the formation. A forward drive in situ combustion process is initiated at an injection well and production of hydrocarbons is initiated from the reservoir from at least one of the production wells. The heated zone is maintained by injecting heat, for example, steam, via another of the production wells while continuously producing hydrocarbons from at least one production well from within the heated zone. The producing wells are alternately employed for producing hydrocarbons from the formation and for injecting heat into the formation to maintain the heated zone about the producing wells.



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**3,794,114**

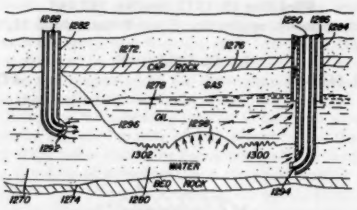
**USE OF LIQUEFIABLE GAS TO CONTROL LIQUID FLOW IN PERMEABLE FORMATIONS**

**Clarence W. Brandon, P.O. Box 490, Nashville, Tenn. 37202**

**Continuation-in-part of Ser. Nos. 611,082, Jan. 23, 1967, and Ser. No. 719,882, April 9, 1968, which is a continuation-in-part of Ser. No. 665,995, June 17, 1957, Pat. No. 3,302,720, which is a continuation-in-part of Ser. No. 296,038, June 27, 1952, Pat. No. 2,866,509, and Ser. No. 241,647, Aug. 13, 1951, Pat. No. 2,796,129. This application Apr. 20, 1972, Ser. No. 245,914**

**Int. Cl. E21b *43/00*, *43/16***

**U.S. Cl. 166—249** **93 Claims**



Control of flow of liquids in formations is effected by introduction of a gas, or gases, into the formation and varying the pressure on the liquid in the formation, which may be an oil and gas bearing formation, and upon the introduced gas wherein inter-dispersed gas and liquid globules may be formed in selected regions of the formation, thus causing capillary blocking to flow of liquids in preselected regions of the formation.

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**3,794,115**

**PROCESS FOR FORMING BOREHOLE PLUGS**

**William E. Skagerberg, St. Paul, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.**

**Filed Jan. 14, 1972, Ser. No. 217,964**

**Int. Cl. E21b *33/138***

**U.S. Cl. 166—294** **6 Claims**

A process for making plugs for boreholes. The process uses dispersions of water soluble polymers and cross-linking

agents, the cross-linking activity of which is retarded. The dispersion is positioned while in a low viscosity state and subsequently high viscosities develop.

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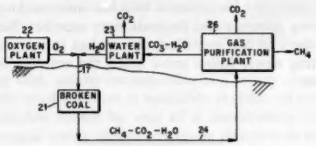
3,794,116

## SITU COAL BED GASIFICATION

Gary H. Higgins, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 30, 1972, Ser. No. 257,965
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—259 8 Claims




Deeply buried relatively thick coal bed formations are fractured explosively. Reactant input conduits communicating with upper portions of the fragmented coal zone and product withdrawal conduits communicating with lower portions thereof are provided. The uppermost layer of the fragmented zone is ignited as by injection of oxygen and fuel gas from a surface plant while the product conduits are closed off to raise the operating pressure in the fragmented zone to balance hydrostatic pressure so that the fragmented zone comprises effectively a pressurized reaction vessel. Water or steam together with regulated amounts of oxygen are then introduced while reaction products are withdrawn at a rate at which operating pressure is maintained so that a relatively higher temperature reaction zone layer is reacted in the upper layer to travel progressively downward. A graduated lower temperature region precedes the higher temperature zone. Various gasification reactions occur in the reaction zones with the net overall products being methane and $CO_2$ with relatively little up to varying amounts of carbon monoxide and hydrogen appearing in the reaction product gas. Processing to remove $CO_2$ and react the carbon monoxide and hydrogen if deemed necessary is done at the surface yielding a high caloric value fuel gas suitable for pipeline or for synthesis uses.

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3,794,117

## TREATMENT OF SANDSTONE FORMATIONS

John A. Knox, and Reginald M. Lasater, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sept. 5, 1972, Ser. No. 286,529
Int. Cl. E21b *43/27*
U.S. Cl. 166—307 13 Claims

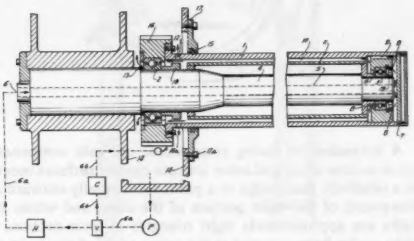
The present invention provides a method of treating a subterranean sandstone formation with an aqueous acid solution containing hydrofluoric acid wherein the reaction rate of the acid with the formation is retarded and substantial penetration of the formation with active acid results.

3,794,118

## HEATED ROLLER AND METHOD OF HEATING THE SAME

Ernst Bauch, Bordesholm, Germany, assignor to Neumunstersche Maschinen-Und Apparatebau Gesellschaft m.b.H., Neumunster, Germany

Filed Nov. 16, 1971, Ser. No. 199,124
Claims priority, application Germany, Nov. 21, 1970, 2057391; Dec. 8, 1970, 7045194
Int. Cl. F28d *11/02*
U.S. Cl. 165—90 10 Claims



A hollow roll is mounted on a shaft by journal means. The shaft has an axial passage through which a heated lubricant fluid is supplied, part of which is circulated to the journal means to lubricate the same and the remainder of which is circulated—bypassing the journal means—directly into the interior of the roll for heating the latter.

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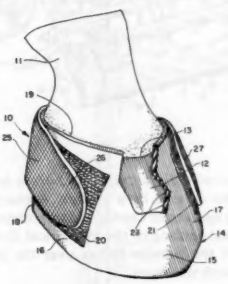
3,794,119

## HORSE SHOE

Al Paiso, 5044 Firestone Pl., Southgate, Calif. 90280, and Jno R. Battle, 337 Mt. Holyoke Ave., Pacific Palisades, Calif. 90272

Filed Oct. 6, 1972, Ser. No. 291,841
Int. Cl. A01l *3/00*
U.S. Cl. 168—18 2 Claims

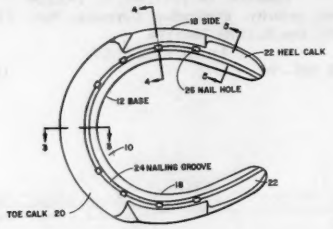



A horse shoe is constructed from a flexible covering contoured to fit substantially entirely over a horse's hoof. Fixed to the sides and upper rear part of the covering are three holding elements. A securement sling or band carrying at least three attachment elements is wrapped around the hoof back portion and opposing sides. The band is oriented to generally overlie the covering in a manner to permit the holding elements and attachment elements to become interlocked in order to firmly secure the covering onto the horse's hoof.

## 3,794,120
## HORSESHOE

Thomas M. Charlson, 114 N. 5th St., Chickasha, Okla. 73018

Filed Oct. 27, 1972, Ser. No. 301,632
Int. Cl. A01i *1/00*
U.S. Cl. 168—24 8 Claims




A horseshoe or racing plate whose toe calk comprises in cross-section inner and outer arcuate convex surfaces meeting at a relatively sharp edge at a point substantially outward and downward of the main portion of the shoe, and whose heel calks are approximately right triangles in cross-section, the right angles being located at the outer edges of the main portion of the shoe. The toe calk preferably encompasses about 50 percent of the peripheral length of the shoe, and the heel calks about 10 percent each.

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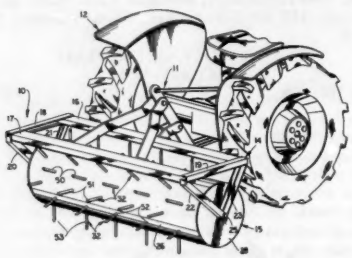
## 3,794,121
## SOIL AERATOR

David A. Drozak, 2693 E. College Ave., Decatur, Ga. 30030

Filed Aug. 4, 1972, Ser. No. 278,029
Int. Cl. A01b *45/02*
U.S. Cl. 172—21 7 Claims



A soil aerator wherein a cylindrical drum is mounted on a framework to be carried by a tractor. A plurality of tubular soil penetrating spikes are connected to protrusions extending from the external surface of the cylindrical drum by inserting the openings of the tubular spikes over the protrusions and into abutment with the drum.

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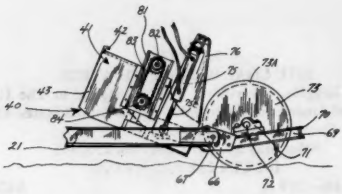
## 3,794,122
## SNOW CONDITIONING MACHINE

Dennis L. Rohrer, 15400 Buck Hill Rd., Burnsville, Minn. 55378

Filed Mar. 14, 1972, Ser. No. 234,512
Int. Cl. A01b *9/00, 5/00*
U.S. Cl. 172—66 18 Claims

A snow conditioning machine for conditioning snow at ski areas to give it a proper texture for skiing even after it has become packed hard or become icy including a rotating member having radial teeth that intermesh with stationary teeth on the machine and through which the snow passes to be reduced in particle size to an acceptable level. The unit includes means for breaking hard packed snow into large chunks which are then passes into the intermeshing teeth of the rotating member and the stationary member. Support rollers for the unit are provided, this makes the unit usable for compacting newly fallen snow when the rotating member is not in use.



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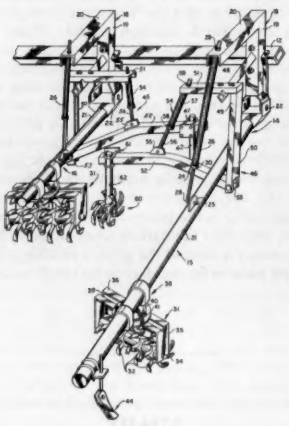
## 3,794,123
## CULTIVATOR

Jack C. Whitesides, Columbus, Ga., assignor to Kelly Manufacturing Company, Tifton, Ga.

Filed May 18, 1972, Ser. No. 254,434
Int. Cl. A01b *21/04, 39/08, 5/04*
U.S. Cl. 172—624 8 Claims



A cultivator including a framework for towing along a plurality of crop rows by a tractor and a plurality of rotary hoe gangs mounted on the framework which rotatably engage and till the soil below the framework. A group of four rotary hoe gangs is provided for each crop row, with one pair of rotary hoe gangs being independently movable about an axis extending along the crop row, and with another pair of rotary hoe gangs being independently movable about an axis extending transverse to the crop row.

3,794,124

## ELECTRICALLY OPERATED HAMMER DRILL

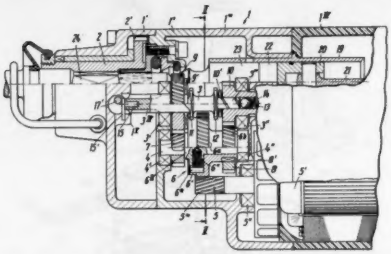
Horst Biersack, Ansbach, Germany, assignor to Impex-Essen GmbH, Ansbach, Germany

Filed Sept. 16, 1970, Ser. No. 72,779

Claims priority, application Germany, Sept. 23, 1969, P 19 48 055.8

Int. Cl. B25d 11/00

U.S. Cl. 173—104 10 Claims



A boring tool, axially reciprocable in a rotary chuck under repeated blows of a striker, is rotatable at either of two speeds from an electric motor by way of a transmission which includes two gear trains alternately made effective in two limiting positions of an axially shiftable coupling shaft. In an intermediate position of that shaft, the chuck is disengaged from both gear trains. The low-speed train includes a yieldable safety clutch to decouple the chuck from the motor in the case of overload.

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3,794,125

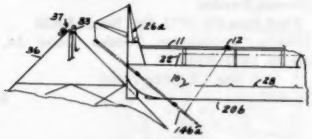
## APPARATUS AND METHOD OF MANEUVER AND SUSTAIN

Arthur John Nelson, San Mateo, Calif.

Continuation-in-part of Ser. No. 105,434, Jan. 11, 1971, Pat. No. 3,738,434. This application Sept. 7, 1971, Ser. No. 178,002

Int. Cl. E21b 7/12

U.S. Cl. 175—6 9 Claims



The attended drilling system comprises a vertical array of objects extending from floor to surface of a body of water. The principal contributing objects of the array considered in the present application comprises: a drilling station that is to be established upon the floor, a control station stably maintained at the surface and a support station adapted to function between as an elevator. These stations are towed to a site as a close coupled self buoyant stable array, whereupon it is expanded and established as stated. Sectionalizing the drilling station to permit variations to its assembly and the relocation of the portable sections minimizes lost time. Adjusting, monitoring and control means are provided to function in a prolonged underwater environment. A diverter, terminating the annulus defined by the drill string in a casing lined hole, accommodates fluid sealed axial movement of the string therethrough and provides fluid communication between said annulus and a conduit remote to the string. Said diverter is adaptable to drilling rigs employing the conventional kelly bar and draw works.

3,794,126

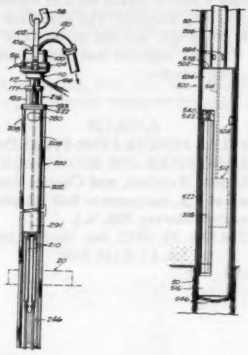
## DRILLING AND BELLING APPARATUS

Robert L. Pereau, Irvine, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Division of Ser. No. 177,037, Oct. 1, 1971, Pat. No. 3,757,876. This application Aug. 23, 1973, Ser. No. 391,008

Int. Cl. E21b 9/26

U.S. Cl. 175—173 3 Claims



Apparatus for drilling a hole, and for belling out the lower end of the hole into a conical enlargement, in a single pass of the apparatus down the drill hole, which apparatus includes a combined drilling and belling tool.

Both the extension and the retraction of the belling blades are positively driven.

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3,794,127

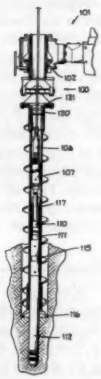
## HOLLOW AUGER-DRIVER COUPLING

Henry E. Davis, Aptos, Calif., assignor to Mobile Drilling Company, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 165,197, July 22, 1971, abandoned. This application June 6, 1972, Ser. No. 260,270

Int. Cl. E21b 49/00, 17/00

U.S. Cl. 175—58 16 Claims



A coupling for connecting an auger to a driver so as to allow core sampling while the auger is positioned within the drilled hole and connected to the driver. One embodiment of the coupling has a ring positioned outwardly of the adjacent ends of the auger and driver. Arms are mounted to the ring and ex-

tend radially inward being bearingly received by the adjacent auger and driver ends. The driver and auger are hollow so as to allow the raising and lowering by cable of a sampling hammer with a sampler. A hollow cap is removably mounted to the top of the auger and has a pair of upstanding members which receive two of the arms of the coupling. A hollow-centered plate is removably mounted to the bottom of the driver and has a pair of depending members which receive the other two arms of the coupling. Another embodiment of the coupling includes a pair of yokes each of which is pivoted to an open centered ring member. The yokes are also coupled, respectively, to the auger and the driver. The yokes extend outwardly of the ring member and are connected through bearings to the ring member.

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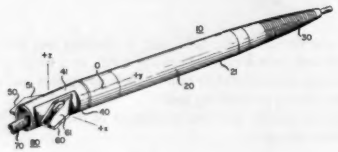
**3,794,128**

## SUBTERRANEAN PENETRATOR STEERING SYSTEM UTILIZING FIXED AND ROTATABLE FINS

**Paul Francis Gagen, Westfield, and Charles Elmer Jones, Jr., Fairfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Nov. 29, 1972, Ser. No. 310,206**
**Int. Cl. E21b** *7/08*
**U.S. Cl. 175—73** **11 Claims**



A steering system for a subterranean penetrator includes a fixed fin and a rotatable fin. The fixed fin is advantageously attached to the exterior rear portion of the penetrator at an angle of approximately 25° with the penetrator's longitudinal axis. The rotatable fin is located diametrically opposite to the fixed fin, the axis of rotation thereof being perpendicular to and intersecting the penetrator's longitudinal axis. An associated actuating mechanism located within the penetrator adjustably orients the position of the rotatable fin. Rotation of the penetrator about its longitudinal axis is effected when the rotatable fin is antiparallel to the fixed fin or to a lesser degree when the rotatable fin is substantially parallel to the penetrator's long axis. Curvilinear penetrator motion along the desired steering plane is effected when the rotatable fin is parallel to the fixed fin, the axis of rotation of the rotatable fin being perpendicular to this plane. In one embodiment of this invention, the rear portion of the penetrator which houses the fins is inwardly tapered at approximately 4° to allow use of substantially smaller fins and/or produce higher steering rates for a given length penetrator. It is an advantage of this invention that it does not require the articulatable tail and its associated actuating mechanism of prior art subterranean penetrators.

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**3,794,129**

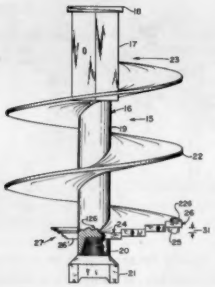
## STEP AUGER AND ROCK BIT COMBINATION

**Thomas L. Taylor, P.O. Box 6048, Odessa, Tex. 79760**

**Filed Dec. 1, 1972, Ser. No. 311,311**
**Int. Cl. E21c** *13/04*
**U.S. Cl. 175—391** **14 Claims**

Combination earth drilling tool in the form of a step auger having a pilot bit attached thereto. A downwardly spiraling flight member is affixed to an elongated axial hub member with the leading edge of the flight terminating in a plurality of cutting teeth arranged in a novel pattern relative to one another and the flight. The cutting teeth are arranged radially from the hub and along the leading edge of the flight member in a configuration which causes the innermost of the digging teeth to cut a first step outwardly from the pilot hole while the remaining of the cutting teeth trail behind and cut subsequent steps into a formation.

The pilot bit is in the form of a rotary rock bit having radially spaced apart pockets formed within a novel cylindrical member and a novel body portion so that the shank of a



removable cutting tooth is received within the pocket with a portion of the shank extending outwardly of the pocket where the shank can be removably fastened to a shoulder formed between the body portion and the cylindrical portion.

The pockets on both the flights and the rock bit are arranged into a configuration whereby any one of the cutting teeth can be substituted for any other one cutting tooth, thereby enabling a single type or designed cutting tooth to be utilized by both the auger and the bit.

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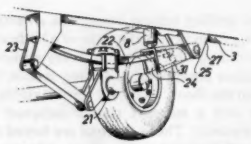
**3,794,130**

## DEVICE FOR WEIGHING OF VEHICLE LOADS

**Per Ake Malmgren, and Kurt Eilert Johansson, both of Kiruna, Sweden, assignors to Ake Malmgrens Mekaniska Verkstad AB, Kiruna, Sweden**

**Filed June 19, 1972, Ser. No. 263,826**
**Claims priority, application Sweden, June 24, 1971, 8254/71; July 20, 1971, 9340/71**
**Int. Cl. G01g** *19/08*
**U.S. Cl. 177—137** **4 Claims**



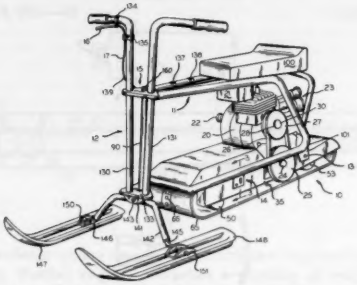
Fastening device for load cell for fitting between the chassis of a truck and a part of the truck which is movable in relation to the chassis for measurement of forces acting on the platform, said device comprising a fastening element constituting a supporting device for said movable part of the truck and designed to be fitted to the truck with some play, at one end of the fastening element there being at this end a carrying member for the load cell fitted between bearing devices placed on the chassis and on said movable part.

3,794,131

## ALL TERRAIN MOTOR SCOOTER

**Gerald Freedman, Wilmette, and Robert A. Wahls, McHenry, both of Ill., assignors to Freedman Seating Company, Evanston, Ill.**

**Filed May 20, 1971, Ser. No. 145,226**
**Int. Cl. B62m *27/02***
**U.S. Cl. 180—5 R** **9 Claims**



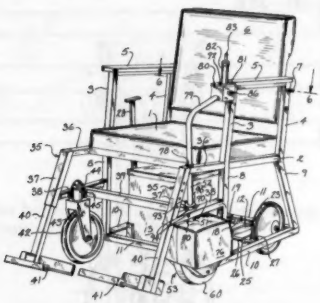
A track chassis supports the center of gravity of the entire vehicle. Pivotally mounted near the back or trailing end of the track chassis is a forwardly extending frame which carries a fork assembly including a pair of either skies or wheels steered by handle bars, which may be quickly replaced by another and similar unit in order to switch between the skis and wheels or oversize low pressure balloon tires. A variable resilient coupling interconnects the front or leading end of the track chassis and the forwardly extending frame. By suitably changing the resilience of the coupling, the front wheels or skis may be made to lift slightly so as not to dig into mud or loose sand, or to bear down and bite into snow.

3,794,132

## SELF-PROPELLED WHEELCHAIR

**Robert W. Moon, Shorewood, Wis., assignor to Lakeside Manufacturing Inc., Milwaukee, Wis.**

**Filed Aug. 16, 1972, Ser. No. 281,081**
**Int. Cl. B62d *61/00***
**U.S. Cl. 180—13** **10 Claims**



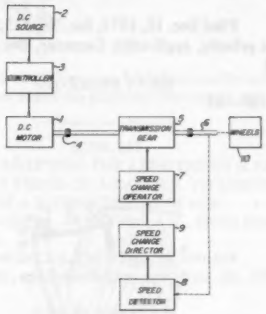
A self-powered wheelchair with four ground engaging wheels, the two rear wheels being mounted on a rear axle that is pivoted about a fore and aft axis at its mid-point for limited tilting in a vertical, transverse plane, one of the front wheels being an idler at one side of the chair, and the other front wheel being part of a power unit at the opposite side of the chair. The power unit is steerable about a vertical axis by turning a steering shaft that rises upwardly and turns rearwardly to present a tiller arm, such tiller arm having a control box at its upper end that presents a vertical palm engageable handle for turning the tiller, and a vertically depressible thumb engageable speed selector rod for governing the speed of the chair. There is also a brake mechanism associated with the rear wheels of which a part tilts with the rear axle and mounts brake shoes to apply desired braking force regardless of the degree of axle tilt.

3,794,133

## DRIVING APPARATUS FOR MOTOR VEHICLE

**Shinzo Sugiura, deceased, late of Katsuta, Japan (by Yoko Sugiura, administratrix); Takeshi Morioka, and Ryoji Kasama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Oct. 18, 1971, Ser. No. 190,092**
**Int. Cl. B60k *1/00*; F16h *3/74*; B60k *21/00***
**U.S. Cl. 180—65 R** **6 Claims**



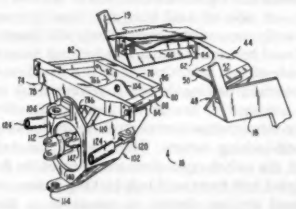

A driving apparatus for a motor vehicle, which employs a power transmission mechanism for transmitting the rotation of a driving motor of the motor vehicle to the driving wheels through a transmission gear mechanism, and in which in order to operate said transmission gear mechanism to a change gear ratio of large output torque at an intersection point between the revolutional speed-revolutional torque curves of an output shaft of said transmission gear mechanism as is obtained at optional change gear ratios, the revolutional speed corresponding to said intersection point between said revolutional speed-rotational torque curves is detected to automatically operate said transmission gear mechanism.

3,794,134

## DETACHABLE ARTICULATION JOINT FOR GROUND VEHICLES

**Walter A. Wood, San Jose, and Dale Hutchins, Palo Alto, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.**

**Filed Sept. 28, 1972, Ser. No. 293,111**
**Int. Cl. B62d *3/02***
**U.S. Cl. 180—79.2 B** **19 Claims**



A two section ground vehicle and a joint for effecting rapid connection and disconnection of the sections. A joint that pro-

vides for articulation between the two vehicle sections. A joint having two complemental tapering parts so as to achieve precise self alignment between the vehicle sections on which they are mounted. Apparatus that renders one or both of the vehicle sections self supporting so that such section can be moved independently and while disconnected from the other section.

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**3,794,135**

## MOTOR VEHICLE SEAT BELT OCCUPANT-RESTRAINT SYSTEM

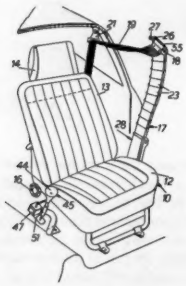
**Bruno Ewert, and Wilfried Roos, both of Russelsheim, Germany, assignors to General Motors Corporation, Detroit, Mich.**

**Filed Dec. 15, 1972, Ser. No. 315,501**

**Claims priority, application Germany, Dec. 21, 1971, P 21 63 451.5**

**Int. Cl. B60n** *21/10*

**U.S. Cl. 180—82** **10 Claims**



A seat belt occupant restraint arrangement of the "passive safety belt" type, in which a seat belt is automatically placed in position around the body of an occupant of a seat in a motor vehicle in response to the closing of a vehicle door adjacent said seat, and is removed therefrom in response to the opening of said door, the seat belt being an articulated belt consisting of segment members having their ends movably connected one to another, said belt having retained adjacent thereto a continuous spring strip arranged for longitudinal tensioning and relaxation along said belt; which belt, when the door is open, occupies an upright position adjacent said seat, and which strip, when said door is closed, is tensioned by means of a motorised driving device attached to one end of said belt adjacent one side of said seat and thus is caused to curve downwardly around the body of said occupant until the free end of said belt locks into a belt-locking means adjacent the other side of said seat. Control of the direction of rotation of the motorised driving device is governed by switch control means arranged on the device and on the vehicle door, said switch control means also controlling the locking operation of said belt-locking means. Thus, when the vehicle door is opened, the switch control means releases the free end of said articulated belt from said belt-locking means, and causes the motorised driving device to rotate in a direction which decreases the tension in the spring strip associated with the articulated belt. This in turn allows the spring strip to unbend, thus straightening and lifting the belt from the body of the occupant so that the belt returns to its aforesaid upright position.

**3,794,136**

## COLLISION DETECTING APPARATUS FOR A VEHICLE

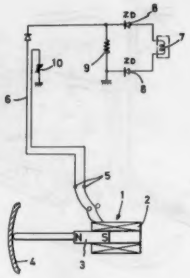
**Motohiro Okada, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo, Japan**

**Filed June 3, 1971, Ser. No. 149,698**

**Claims priority, application Japan, June 4, 1970, 45/47580**

**Int. Cl. B60r** *21/02*

**U.S. Cl. 180—91** **5 Claims**



Electrical generators are connected to the body of a vehicle to detect deformation of the body at the time of collision and produce an electrical voltage signal to actuate a safety device such as an air bag. Each generator comprises a relatively movable coil and magnet assembly which is connected to the safety device by a circuit containing a Zener diode and possibly a silicon control rectifier to establish a threshold level for actuation of the safety device.

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**3,794,137**

## DEVICE FOR ATTENUATING THE NOISE GENERATED BY THE EXPANSION OF GASES INTO THE ATMOSPHERE

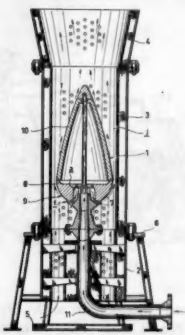
**Constantin GH. Teodorescu; Constantin N. Ceauselu, and Grigore Vlasie Vasilescu, all of Bucharest, Romania, assignors to Institutul Pentru Creatic stiintifica si Tehnica (Increst), Bucharest, Romania**

**Filed Sept. 15, 1972, Ser. No. 289,289**

**Claims priority, application Romania, Dec. 13, 1971, 69039**

**Int. Cl. F01n** *1/10, 1/14, 1/00*

**U.S. Cl. 181—33 E** **4 Claims**



A device for attenuating the noise generated by the expansion into the atmosphere of the gases an industrial installation.

The device utilizes an exterior type Coanda ejector, the body of which has an annular cavity followed by a slot and further by an outer curving profile and a converging cone; the ejector lies in an attenuator ending in an exhaust cone.

3,794,138

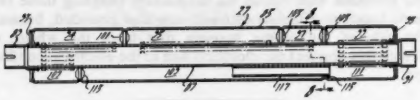
## EXHAUST SYSTEM

Robert A. Heath, Racine, Wis., and Ronald J. Martoia, Jackson, Mich., assignors to Tenneco Inc., Racine, Wis.

Continuation-in-part of Ser. No. 868,283, Oct. 13, 1969, Pat. No. 3,648,803, which is a continuation of Ser. No. 531,245, March 2, 1966, abandoned. This application Mar. 9, 1972, Ser. No. 233,211

Int. Cl. F01n 1/00

U.S. Cl. 181—48 3 Claims



An exhaust system for internal combustion engines, including the Wankel engine, comprises a plurality of very thin silencing members arranged in series and of the straight through flow type, the silencers preferably including an outer tube of an oval shape that longitudinally contacts both sides of an inner gas flow tube that is suitably perforated to cooperate with silencing means in the space between the outer shell and the flow tube.

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3,794,139

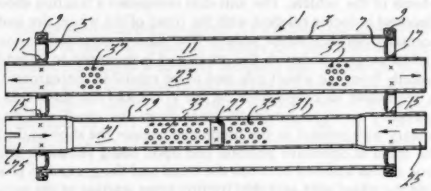
## MUFFLER WITH PLURAL INLETS AND OUTLETS

Theodore W. Hetherington, and Larry E. Strunk, both of Jackson, Mich., assignors to Tenneco Inc., Racine, Wis.

Filed Jan. 2, 1973, Ser. No. 320,506

Int. Cl. F01n 1/08

U.S. Cl. 181—56 7 Claims



A muffler has four inlets and two outlets opening into a sound attenuating chamber.

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3,794,140

## BOAT LADDER

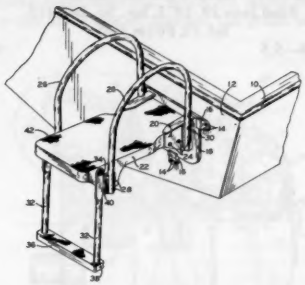
James F. Sell, R.R. 3, Box 157, Muncie, Ind. 47302

Filed Feb. 9, 1972, Ser. No. 224,867

Int. Cl. E06c 9/06

U.S. Cl. 182—92 2 Claims

A boat ladder adapted for mounting on the rear of a boat, for example, on the outside wall of the transom of the boat. The boat ladder comprises a substantially horizontal platform portion projecting outwardly from the boat and having side rails connected thereto while a step is pivotally mounted at the outer end of the platform and can be lowered to below the level of the platform for use, or folded upwardly and toward the boat to rest on top of the platform when not in use.



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3,794,141

## DEVICE FOR ADAPTING THE LENGTHS OF A PAIR OF LEGS, SUCH AS THOSE OF A LADDER, TO UNEVENNESS OF A SUPPORTING SURFACE

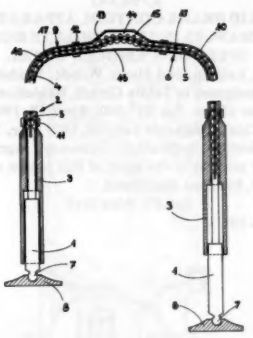
Walter Sturm, Apt. 11, 2410 Third Ave., Owen Sound, Ontario, Canada

Filed Oct. 24, 1972, Ser. No. 300,349

Claims priority, application Germany, Feb. 10, 1972, P 22 06 326.9

Int. Cl. E06c 7/44

U.S. Cl. 182—202 5 Claims



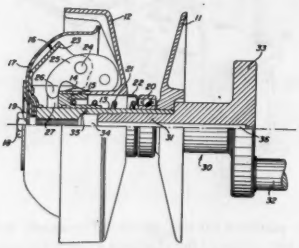
A device is provided which can be mounted at the lower end of a ladder for adapting the legs of the ladder to the unevenness of the ground. The device comprises two extension legs which are mounted for telescoping movement into and out of the respective ends of a U-shaped tubular member which is fastened to the ladder. The extension legs are interconnected through the tubular member by means of a longitudinal flexible member having a series of longitudinally spaced recesses on its outer surface. The U-shaped tubular member has an expanded portion midway between its legs so that the longitudinal flexible member will bulge into the expanded portion when pressure is applied to both extension legs. A number of mutually spaced projections are provided inside the expanded portion for fitting into the recesses on the flexible member when it bulges into the expanded portion to lock the flexible member in position relative to the tubular member.

3,794,142

## LUBRICATION SYSTEM FOR VARIABLE SPEED DRIVE PULLEY

Jules Perreault, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed June 29, 1972, Ser. No. 267,473
Int. Cl. F01m 1/06
U.S. Cl. 184—6.5 4 Claims



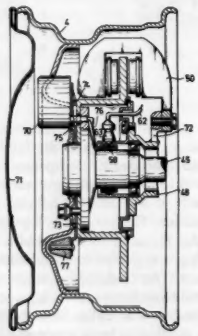
An automatic system is disclosed for lubricating a variable speed drive pulley of the type having two pulley sheaves axially mounted for rotation on the output end of a crankshaft of a two-cycle engine and wherein one sheave is free to move axially relative to the other. Heretofore, pulleys of this type required maintenance mantenance in order to ensure proper lubrication between the movable sheave and a pulley shaft connected to the output end of the crankshaft. The novel system comprises a conduit which extends through the crankshaft and which leads oil from the interior of the engine's crankcase to between the movable sheave and the output portion of the pulley shaft fixed to the crankshaft.

3,794,143

## ANTI-SKID BRAKE CONTROL APPARATUS FOR SENSING CHANGES IN THE ABSOLUTE ROTATIONAL SPEED OF A VEHICLE WHEEL

Heinz Leiber, Leimen, and Heinz Wehde, Heidelberg, both of Germany, assignors to Teldix GmbH, Heidelberg, Germany

Continuation of Ser. No. 817,340, April 18, 1969, Pat. No. 3,563,351. This application Feb. 10, 1971, Ser. No. 114,213
Claims priority, application Germany, Apr. 20, 1968, 1755280. The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.
Int. Cl. B60t 8/16
U.S. Cl. 188—181 A 7 Claims



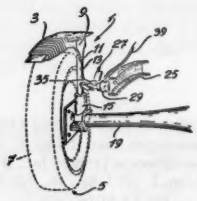
An anti-skid brake control system having means for sensing changes in the absolute rotational speed of a vehicle wheel. The sensing means which is eccentrically mounted on the wheel, includes a hermetically sealed housing, an inertial mass arranged within the housing and rotatable relative to the housing within a limited angular range, an electrical signaling device responsive to the relative rotation between the inertial mass and the housing and at least one electrical conductor connected to the signaling device and passing through the housing. The brake control system is also provided with an electrically actuatable device for controlling the brake pressure applied to the sensed wheel and an electrical line interconnecting the sensing means with this control device. According to the invention, the sensor housing and the vehicle wheel or a member rigidly connected with the vehicle wheel are provided with means for detachably coupling these two parts together. Contact elements are also provided, beneath the side of the sensor housing that faces the wheel, to detachably connect the electrical line to the electrical conductor.

3,794,144

## MOTOR VEHICLE ANTI-SKID DEVICE

Joel Tepper, Montreal, Quebec, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 16, 1972, Ser. No. 289,826
Int. Cl. B60t 1/14
U.S. Cl. 188—4 R 9 Claims



An anti-skid device for motor vehicles provides, particularly at start-up on slippery roads, additional friction to the traction wheels of the vehicle. The anti-skid comprises a traction shoe disposed in facing relation with the tread of the wheel tire and normally out of contact with it. The shoe is mounted at one end of an arm of which the other end is mounted to extend radially from the wheel axle and to be rotatable therearound. A releasable locking device on the arm locks the shoe in inoperative position outwardly away from the tread and stationary with respect to the frame and presses the shoe against the tread in operative position and upon being released. The shoe is thus inserted between the tread and the ground to provide the wheel with anti-skid friction upon starting of the vehicle on slippery grounds.

3,794,145

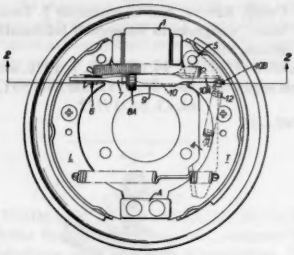
## VEHICLE BRAKE ADJUSTER

Hugh Grenville Margetts, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Aug. 23, 1971, Ser. No. 173,954
Claims priority, application Great Britain, Aug. 24, 1970, 40573/70
Int. Cl. F16d 65/56, 51/70
U.S. Cl. 188—79.5 P 5 Claims

An auto-adjuster for an internal shoe drum brake having power and manual brake applying means, the latter working through a strut comprising relatively rotatable screw threaded members, comprises a spring biased pawl pivotally mounted on one brake shoe on the same pivot as a handbrake applying lever, the pawl spring exerting sufficient force to rotate the pawl to effect adjustment when the strut is relieved of the shoe

return spring force, but insufficient force to effect adjustment when the strut is loaded by operation of the hand brake



mechanism. The same spring also yieldingly biases the pawl laterally into engagement with the ratchet wheel, allowing the pawl to spring over the ratchet teeth when required.

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**3,794,146**

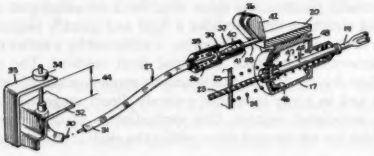
**EMPTY-LOAD BRAKING APPARATUS**

**Robert L. Ludington, 3419 Manitou Tr., and Robert M. Holloway, 921 N. Roeske Tr., both of Michigan City, Ind. 46360**

**Continuation-in-part of Ser. No. 127,277, March 23, 1971, which is a continuation-in-part of Ser. No. 1,266, Jan. 7, 1970, Pat. No. 3,612,230. This application Aug. 3, 1972, Ser. No. 277,811**

**Int. Cl. B60t** *8/22*

**U.S. Cl. 188—195** **15 Claims**



Empty-load braking apparatus for a railway car in which the cylinder of the fluid operable cylinder and piston means which actuates the brakes is slidably mounted and movement of the cylinder upon actuation of the brakes is opposed by a spring with a lightly loaded car. With a heavily loaded car, a pawl controlled by load responsive means on the car limits the movement of the cylinder so that a greater braking force is applied.

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**3,794,147**

**BOOT AND CONTROL MECHANISM**

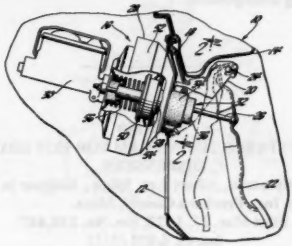
**Ronald L. Shellhause, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.**

**Division of Ser. No. 217,805, Jan. 14, 1972, Pat. No. 3,735,067. This application Dec. 5, 1972, Ser. No. 312,333**

**Int. Cl. F16d** *23/00*

**U.S. Cl. 192—3 G** **2 Claims**

A power brake assembly has a boot through which the brake pedal operated push rod extends to control the power brake. Instead of the usual flexible convoluted rubber boot, the boot is made of two housings forming tubes or cylinders, one slidably located within the other, with the power brake piston extension containing the atmospheric air inlet filter extending into the inner housing. A switch mechanism is provided in the outer housing and includes a biasing spring acting on a switch contact carrier. The inner housing has a probe which engages the contact carrier so that in one slidable position of the inner housing relative to the outer housing the contact carrier is urged into position relative to other switch contacts so that the switch or switches comprising the switch mechanism have assumed positions, either open or closed, as desired. This occurs when the power brake piston has moved in the brake apply direction. When the power brake piston moves to the brake release position, the probe on the inner



housing moves the contact carrier against the spring, changing the operational status positions of the switches. A vacuum control valve arrangement is also provided so that a port is closed or connected to atmosphere depending upon the position of the inner housing relative to the outer housing, if such a vacuum control is needed as, for example, in conjunction with a road speed control device.

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**3,794,148**

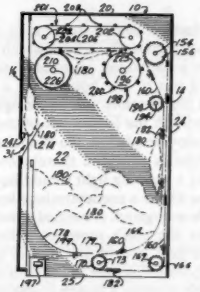
**TOWEL VENDING MACHINE FOR FABRIC-LIKE ARTICLES AND METHOD**

**Queve E. Copp, 3470 Thornwood Dr., Doraville, Ga. 30340**

**Filed June 15, 1972, Ser. No. 263,308**

**Int. Cl. G07f** *7/06*

**U.S. Cl. 194—4 C** **22 Claims**



An electrically operated shop towel vending machine for dispensing a clean shop towel only in response to the proper input of a satisfactory dirty towel inspected as to length, strength or texture and bulk. The machine cabinet is locked in an effort to prevent lost and wasted shop towels and has an input opening for the dirty shop towel and an output exit for a clean shop towel. The input section of the machine includes a continuous, endless chain with protruding towel pick-up members on which a dirty towel is hung. An inspection procedure includes a rotatable towel contact wheel contacting the towel to determine the proper length of the towel and a switch positioned to determine the proper bulk. The input section of the machine is electrically related to the output section so that the clean shop towel is dispensed only if a dirty shop towel passes inspection. Clean shop towels are simply stored by piling in the cabinet near a towel dispensing conveyor system including a pick-up belt and a shedding arrangement whereby clean

towels are constantly being conveyed to the shedding or separating arrangement and by means of a special relationship of relative motion of conveyors only one is fed through and dropped to the dispensing exit each time one dirty one is put in the machine. Other details include the electro-mechanical arrangement of the input section and the electro-mechanical arrangement of the output conveyor section and the details of the shedding arrangement.

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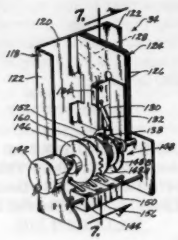
**3,794,149**

## ADJUSTABLE TIMING CAM FOR HOT DRINK DISPENSERS

**Martelle J. Syverson, Albert Lea, Minn., assignor to Fountain Industries, Inc., Freeborn County, Minn.**

**Filed Mar. 27, 1972, Ser. No. 238,447**
**Int. Cl. G07f *15/12***
**U.S. Cl. 194—13** **9 Claims**



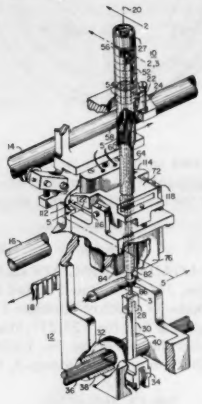
A housing includes a heated water tank, two pairs of particulate food product cartridges from which metered servings are funneled into a cup along with hot water. The hot water vapors are blown out of the housing by a fan directing air downwardly past the agitation and metering scoop in the food cartridges and through the funnel out of the machine. A cup support shelf is provided below the funnel and heated water conduit and a float is provided therebelow connected to a switch for lighting a warning light should liquid in the bottom of the housing rise above a predetermined level. The electrical circuitry is also de-energized. A control switch is actuatable by the cup to insure the cup's presence before water or food product is discharged. A coin mechanism is provided in the housing and includes a first cam in the path of a coin for holding the coin which actuates a switch connected to a motor for rotating the cam shaft. A second cam will cause the motor to turn the cam shaft one full revolution after it has started turning by the coin actuating the switch. The coin is then dropped to the bottom of the coin mechanism. Upon the cam shaft making one complete revolution the first cam will again be in a position to receive the next coin to repeat the cycle. During the one revolution of the cam shaft food product cams will operate switches a predetermined number of times to cause solenoids connected thereto to discharge corresponding numbers of scoops of food product from the food cartridges. Still another cam controls the maximum quanity of water which can flow from a solenoid valve controlled water conduit such that no more than a cup of water will be discharged. The water cam is adjustable and includes coaxial overlapping portions which are engaged by the switch previously engaging the coin for the desired degrees of the one revolution of the cam shaft. Upon the coin dropping from the coin guide the switch actuating element moves through the coin guide for engagement with the adjustable cam.

**3,794,150**

## AXIALLY AND ROTATIONALLY MOVEABLE PRINT HEAD

**Steven P. Cahill, Revere, and Constantine J. Pateuk, Natick, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.**

**Continuation of Ser. No. 94,144, Dec. 1, 1970, abandoned.**
**This application Oct. 27, 1972, Ser. No. 301,545**
**Int. Cl. B41j *1/32***
**U.S. Cl. 197—55** **15 Claims**



A novel carriage apparatus for a high speed serial printer is herein disclosed. The carriage apparatus comprises a rotatable and axially positionable print head with an associated positioning structure that provides a rigid and quickly responsive drive to the print head. The drive is achieved by a series of interconnecting rotational and axial shaft motions. The combination drives emphasize a relatively small number of moving parts and in some instances embody direct magnetic drives from associated motors. One embodiment of the invention provides for an internal drive within the shell of the print head itself.

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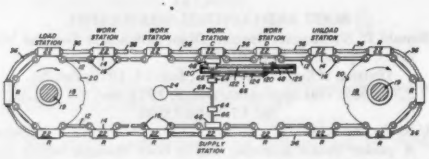
**3,794,151**

## METHOD AND APPARATUS FOR CONTINUOUSLY SUPPLYING FLUID PRESSURE TO A PLURALITY OF FLUID DIRECTING MEMBERS

**Raymond D. Feasey, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Feb. 5, 1973, Ser. No. 329,933**
**Int. Cl. B65g**
**U.S. Cl. 198—19** **18 Claims**




A fluid pressure supply system for continuously supplying fluid pressure to a plurality of independent, spaced apart, fluid directing members intermittently movable in unison between rest positions at various stations. A stationary valve connector located at a supply station is connectable to each of the fluid directing members in succession at the supply station for supplying fluid pressure to the members while at rest. Such pressure connection is broken to permit movement of the mem-

bers in unison to succeeding rest positions. A movable valve connector located at a work station is connectable to a fluid directing member at rest at the work station for supplying fluid pressure to the members. The movable valve connector is movable along with the member to a succeeding rest position and work station to supply fluid pressure to the members while the stationary valve is disconnected and incapable of supplying fluid pressure to the members.

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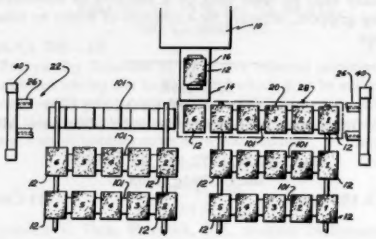
### 3,794,152
### AUTOMATIC MOLD INDEXING DEVICE

**James Nicholas Reyland, St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Apr. 24, 1972, Ser. No. 246,835**
**Int. Cl. B66b** *17/00*
**U.S. Cl. 198—20** **5 Claims**



A transfer mechanism is disclosed for use in a foundry operation by receiving the output of an automatic molding machine and for transferring the sand mold produced from the machine onto a pallet line for pouring of the molds. The transfer mechanism may be designed for a single pallet line with the machine at one end of the line or alternatively may be designed for two longitudinally spaced lines with the machine at the center of the two lines. The carriage mechanism is a multiple mold-bearing shuttle, translatable past the machine output station and is advanced by a rope drive Geneva mechanism to convey the carriage mechanism in a step-by-step path along the edge of the pallet lines. On each such step, a mold is moved from the machine to the transfer mechanism and at the end of a traverse of the mechanism, the molds are removed from the carriage mechanism onto the pallet line.

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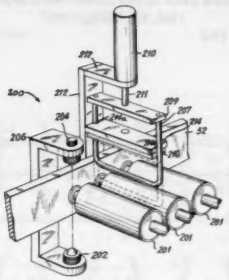
### 3,794,153
### FABRIC TURNOVER DEVICE

**Enrique Lopez; Robert D. Spidle, and Aubrey Glenn Beazley, all of El Paso, Tex., assignors to Farah Manufacturing Company, Inc., El Paso, Tex.**

**Continuation-in-part of Ser. No. 44,710, June 9, 1970, Pat. No. 3,611,961. This application Oct. 6, 1971, Ser. No. 186,986**
**Int. Cl. B65g** *47/24*
**U.S. Cl. 198—270** **9 Claims**

A device for turning over sequentially alternate garment components being transferred on a conveyor is disclosed which senses the presence of a garment component on the conveyor, raises and captures the leading edge of the garment component thereby permitting conveyor rollers covered with an elastomeric material to sweep the following edge of the garment component under its captured leading edge, and releases the captured leading edge of the garment after an appropriate delay period.



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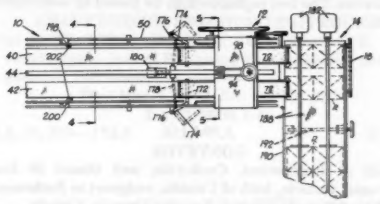
### 3,794,154
### ARTICLE GROUP ASSEMBLY AND FORWARDING CONVEYOR FOR WRAPPING MACHINES

**Ronald Holt, Battle Creek, Mich., assignor to Franklin Electric Subsidiaries, Inc., Bluffton, Ind.**

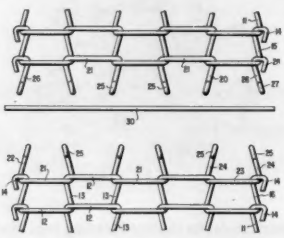
**Filed Dec. 1, 1972, Ser. No. 311,304**
**Int. Cl. B65g** *35/30, 47/26*
**U.S. Cl. 198—34** **12 Claims**



Parallel feed conveyors deliver side by side rows of articles to side by side accelerating conveyors. The accelerating conveyors deliver groups of articles transversely across parallel side by side wrapping machine conveyors having package advancing flights in the plane of both conveyors and transversely across the end of the accelerating conveyors. The accelerating conveyors have two different speed drive connections, and adjustable cycle dividing switches driven at the same frequency as the cycle of the advancing flights of the wrapping machine conveyors function to engage the high speed drive to the accelerating conveyors during a fraction only of each package advancing cycle. The dividing switches also function to momentarily close article stop gates between the feed conveyors and the accelerating conveyors at about the beginning of each cycle of the machine.

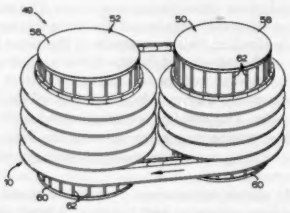
Adjustable clutch connections permit two speed operation of the in-feeding conveyors and continuous lower speed drive of the accelerating conveyors, for collecting and wrapping half or fractional size groups of articles from the lead articles in the parallel feed conveyors. Longitudinal adjustment of the accelerating conveyors to accommodate the smaller packages is provided.

3,794,155
WIRE MESH BELT
Alfred R. Bechtel, Jr., Portsmouth, R.I., assignor to Ashworth Bros., Inc., Fall River, Mass.
Filed June 2, 1972, Ser. No. 259,039
Int. Cl. B65g *15/00*
U.S. Cl. 198—194 8 Claims



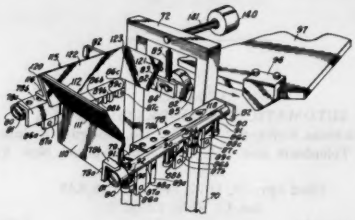
An improved means for connecting two end strands of two separate parts of a wire mesh belt having a plurality of interlocked zig zag strands which includes a first row of generally U-shaped connecting links each interlocked with one end strand and a second row of connecting links interlocked with the other end strand. The links have loops at their extremities which are axially aligned whereby a connector rod inserted therethrough connects the two rows and consequently the end strands together. In one embodiment the connector rod is straight throughout its main body portion and a hooked end connecting element is connected to each end thereof and interlocked with one of the end strands. In another embodiment the connector rod is comprised of two straight aligned segments having hooked outer ends interlocked with one of the end strands. The two segments may be joined by a connecting sleeve.

3,794,156
CONVEYOR
Warren A. Brackmann, Cooksville, and Daniel Di Ianni, Toronto, Ontario, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada
Continuation of Ser. No. 27,957, April 13, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,062
Int. Cl. B65g *15/00*
U.S. Cl. 198—136 12 Claims



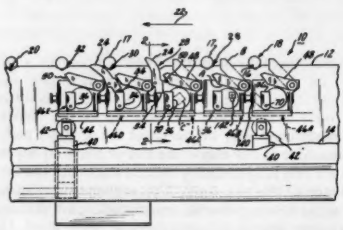
A conveyor includes a driving member and a chain consisting of a plurality of articulated links. Each of the links includes a platform adapted to support a load in cantilever manner.

3,794,157
AUTOMATIC FILLING AND WEIGHING MECHANISM
Nelson R. Henry, 583 Willivee Dr., Decatur, Ga. 30030
Division of Ser. No. 675,125, Oct. 13, 1967. This application Feb. 22, 1971, Ser. No. 117,762
Int. Cl. B65g *15/00*
U.S. Cl. 198—131 7 Claims



Automatic filling and weighing mechanism in which receptacles are moved in a prescribed path and automatically releasably held by their rims by a plurality of downwardly opening grippers, actuated by a rotation of levers to release the bags.

3,794,158
ACCUMULATING CONVEYOR SYSTEM
Walter Greenwood, Jr., 505 Brentwood Dr., Dearborn, Mich. 48124
Filed Feb. 24, 1972, Ser. No. 229,024
Int. Cl. B65g *25/08*
U.S. Cl. 198—223 11 Claims



An accumulating conveyor system of the type having a pair of spaced longitudinally disposed frames on which a plurality of equally spaced article support stations are provided and through which articles are advanced from a load station at one end of the frames to an unload station at the opposite end of the frames. A plurality of conveyor modules are reciprocably mounted in directions paralleling the longitudinal axes of the frames with each module being so mounted as to be movable between a pair of adjacent stations. Each module comprises a housing having a reciprocably mounted actuating rod, the outer ends of which are adapted to alternately, engagably abut the outer ends of the actuating rods, respectively, carried by the modules immediately thereahead and therebehind. Article engaging levers carried by each module become operative upon movement of their associated actuating rods to engage an article in one of the associated support stations to transfer the article to the next forward adjacent station when the modules are reciprocated toward the unload station. Each support station has means for sensing whether the support station is empty and such sensing means is adapted to cooperate with an externally mounted lever carried by the module housing to cause reciprocal movement of its associated actuating rod and thereby actuate the article engaging levers to an

operative position while at the same time the associated rod abuttably engages the rod of the module therebehind to shift the same and all rods therebehind to position their associated article engaging levers to an operative position thereby causing all articles carried in support stations behind the empty station to be advanced one station as the modules are reciprocated toward the unload station of the conveyor system. Means are provided to activate the actuating rod in the module associated with the load station of the conveyor so that all forwardly spaced modules actuating rods are shifted in such a manner as to position the article engaging levers to an inoperative position as the modules are reciprocated toward the load station back to the initial starting position.

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**ERRATUM**

For Class 206—173 see:
Patent No. 3,794,210

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## 3,794,159
## PROCESS FOR FLOTATION OF LARGE SIZE MINERAL PARTICLES

**Arno Singewald, Kassel, Germany, assignor to Wintershall Aktiengesellschaft, Kassel, Germany**

**Filed Dec. 14, 1970, Ser. No. 98,210**
**Int. Cl. B03b** *7/00*
**U.S. Cl. 209—12** **7 Claims**

Process for flotation of large size mineral particles which comprises mixing the turbid liquid which is to be subjected to flotation with a fine particle size weighting agent by which the large size particles are made more buoyant and are on treatment with air bubbles more easily floated out.

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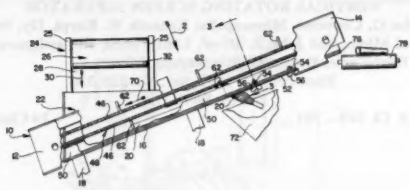
## 3,794,160
## BOBBIN SORTING

**Raymond V. Tata, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.**

**Continuation-in-part of Ser. No. 857,750, Sept. 15, 1969, abandoned. This application June 21, 1971, Ser. No. 155,122**
**Int. Cl. B07b** *13/04*
**U.S. Cl. 209—90** **8 Claims**

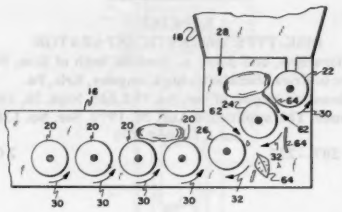


An apparatus for sorting filled bobbins from empty bobbins. The bobbins are deposited on a platform which declines transversely toward a retaining surface so that the bobbins roll on the platform and against the retaining surface. Pushers segregate the bobbins from each other on the platform and move each bobbin serially from a wide portion of the platform onto a portion of the platform sufficiently narrow that larger diameter filled bobbins will roll overcenter across an edge of the platform to be collected in any suitable manner. However, the smaller diameter bobbins generally devoid of yarn are cradled on the narrow portion of the platform and the retaining surface and do not roll overcenter. Rather, the empty bobbins are conveyed to an end of the platform and are deposited in any suitable collecting means separate from the collecting means for the bobbins having yarn. The narrow portion of the platform is adjustable so that the edge of the platform over which the bobbins roll overcenter may be moved toward or away from the retaining surface for sorting different diameter bobbins.

## 3,794,161
## POTATO CUTTING MACHINE

**Soren Eskel Peterson, 875 S. Redwood Rd., Salt Lake City, Utah 84104**

**Filed Nov. 10, 1971, Ser. No. 197,220**
**Int. Cl. B07b** *13/04*
**U.S. Cl. 209—106** **16 Claims**



A potato cutting machine including means for eliminating sprouts and other debris comprising a first plurality of driven rollers disposed in a common plane for transporting potatoes, a second plurality of driven rollers extending upwardly and rearwardly from said first plurality of rollers in stepwise fashion and having at least one of said second plurality of rollers rotating in a direction reverse from that of said first plurality of rollers, means for delivering potatoes and debris to said second plurality of rollers, and means for aligning potatoes for presentation to a cutting mechanism, said aligning means comprising a conveyor having a plurality of transverse troughs, and a plurality of resilient bands extending across said conveyor and spaced above said conveyor a distance such that properly aligned potatoes lying in said troughs will pass under said bands while improperly aligned potatoes will engage said bands and be restrained thereby.

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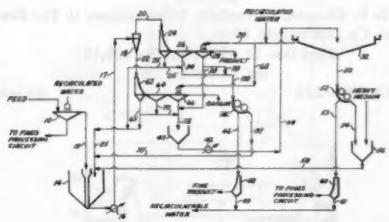
## 3,794,162
## HEAVY MEDIUM BENEFICIATING PROCESS

**Francis G. Miller, Bethlehem, and Stanton D. Irons, Northampton, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.**

**Filed Mar. 6, 1972, Ser. No. 231,852**
**Int. Cl. B03b** *3/44*
**U.S. Cl. 209—172.5** **8 Claims**



A process for heavy medium beneficiating of coal, including particles in the 28 × 150 mesh range. As-mined or crushed coal is washed and screened to prepare a feed material whose average coarseness is greater than about 150 mesh. This feed is combined with a heavy medium, such as water and magnetite, and cycloned. Cyclone overflow is screened, drained and rinsed to separate returnable heavy medium, fines (both heavy medium and ore) from coarse product. Fines are processed through a magnetic separator to separate the heavy medium from a non-magnetic fines ore-water fraction. The ore-water fraction is screened to separate a fine product and

recirculatable water. Cyclone underflow is similarly screened to separate returnable medium, fines (medium, gangue and ore particles) from coarse gangue. The fines are concentrated in a densifier and then magnetically separated into a magnetic and non-magnetic fraction. The magnetic fraction is reused as heavy medium and the non-magnetic fraction is screened to recover recirculatable water and a particle fraction which requires further processing.

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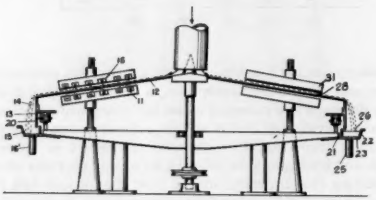
**3,794,163**

## DISK-TYPE MAGNETIC SEPARATOR

**Arlo F. Israelson, and Jerzy A. Bartnik, both of Erie, Pa., assignors to Eriez Manufacturing Company, Erie, Pa.**

**Continuation-in-part of Ser. No. 762,845, Sept. 26, 1968, abandoned. This application Apr. 28, 1971, Ser. No. 138,341**
**Int. Cl. B03c 1/08**
**U.S. Cl. 207—223** **2 Claims**



A magnetic separator made up of a disk in the shape of a cone with a downwardly extending cylindrical skirt. A circular trough with a drain is supported below the skirt. A feed pipe is supported above the center of the disk and a conical boss extends up into the feed pipe to distribute the material over the top of the disk where it flows downward over the cone to the trough. Spaced arcuate magnets are supported above and below the disk so they distribute magnetic fields through the disk and attract magnetic as well as some non-magnetic material. In a second embodiment, radial magnets are supported above and below the disk. The invention disclosed herein concerns the creation of high gradient type magnetic fields and the ability to adjust these fields to best suit the magnetic materials to be separated.

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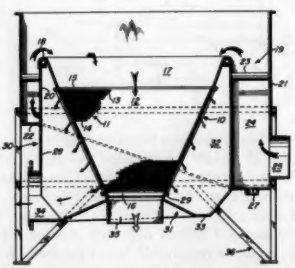
**3,794,164**

## HOPPER TYPE SEPARATING AND CLASSIFYING DEVICE

**Marvin E. Ginaven, Springfield, Ohio, assignor to The Beuer Bros. Co., Springfield, Ohio**

**Filed Dec. 21, 1970, Ser. No. 100,153**
**Int. Cl. B07b 1/06**
**U.S. Cl. 209—243** **8 Claims**



Apparatus for separating and/or classifying liquids and solids characterized by a hopper type receptacle defining a generally vertical flow channel. The receptacle is distinguished by an interior wall portion providing a flow surface formed to cause fluid to adhere thereto and pass through apertures defined therein and further having a construction to produce a pressured turbulence in a fluid flow whereby to cause additional fluid to move through said apertures.

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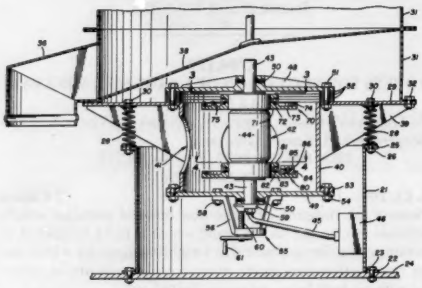
**3,794,165**

## MOTION CONTROL FOR A MATERIAL SEPARATOR

**Laverne J. Riesbeck, and Willis A. Blackwell, both of Canton, Ohio, assignors to Midwestern Industries, Inc., Massillon, Ohio**

**Filed Mar. 17, 1971, Ser. No. 125,274**
**Int. Cl. B07b 1/36, 1/42**
**U.S. Cl. 209—325** **11 Claims**



A device for generating motion to a conventional material separator consists generally of a variable speed rotatable shaft-like member. Attached to the rotatable member are weights, the position of which is adjustable axially along and circumferentially around the rotatable member. Further, the axial position of the rotatable member and the weights affixed thereto is adjustable, thus providing a wide range of motions to the material separator.

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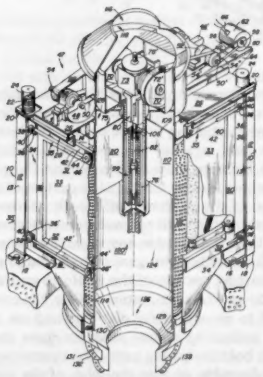
**3,794,166**

## VERTICAL ROTATING SCREEN SEPARATOR

**John O. Converse, Minneapolis; Kenneth W. Korpi, Ely, both of Minn., and John R. Diver, Lake Forest, Ill., assignors to Hart-Carter Company, Minneapolis, Minn.**

**Filed Feb. 22, 1972, Ser. No. 228,036**
**Int. Cl. B07b 1/26**
**U.S. Cl. 209—301** **24 Claims**



A rotating vertical cylindrical screen which is suspended by a spring from an inner frame member for the separation of

seeds or other dry or moist-surface solid particulate matter according to size or shape or as to content of foreign matter. The aggregate containing the foreign matter is fed to the top of the screen through a rotating distributor means which casts the aggregate against the inner surface of the wall of the screen. The screen has a vertical mode of vibration imposed thereon by rotating eccentric weights operationally mounted thereto, which weights work in conjunction with the force of gravity to move said aggregate down the inner wall of the screen surface. The small particulates and foreign matter in the aggregate are readily transmitted through the wire mesh of the screen under the increased centrifugal force thereon due to their rotation with the rotating screen on which they lie. These small transmitted particulates are thrown outwardly from the rotating screen, and are caught by and collected in a surrounding shell to be subsequently discharged through a collecting funnel and spout. Those particulates larger than the screen mesh which do not pass therethrough remain within the screen and move further down the inside thereof to be subsequently discharged through a second collecting funnel and spout. The inner frame of the separator is supported by an outer spring suspension means on an outer frame structure which is set on the floor for effectively isolating all vertical shaking forces from the rotating eccentric weight drive from said floor or supporting structure. The rotating screen is effectively supported in a horizontal direction by a soft spring stabilizing means for isolating all lateral forces from said floor or supporting structure introduced therein by a rotating unbalance of aggregate flow through the screen.

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**3,794,167**

## METHOD AND APPARATUS FOR SUPPLYING AND CONTROLLING FLOW OF A LIQUID SUSPENSION THROUGH LAMINAR APPARATUS

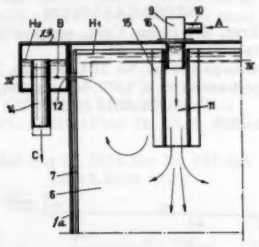
**Gunnar Olgard; Bo Forsell, both of Nynashamn, and Bengt Uddstrand, Stora Vika, all of Sweden, assignors to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden**

**Continuation of Ser. No. 122,800, March 10, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,711**

**Claims priority, application Sweden, Mar. 12, 1970, 3281/70**

**Int. Cl. B01d *21/24***

**U.S. Cl. 210—84** **7 Claims**



A method and an apparatus for supplying and controlling the flow of a liquid suspension through a laminar apparatus having separate parallel sedimentation spaces formed by plate means inclined relative to the horizontal plane, wherein the suspension is supplied to the sedimentation spaces and the sediment in each of these spaces sinks downward and flows past the lower edge of the plate means down into a trough while the clarified liquid flows upwards and out through outlets provided in the upper part of the plate means.

The entering suspension is distributed over all sedimentation spaces over a wide area to prevent clogging, and the distribution of the suspension to and through each and all sedimentation spaces is controlled and maintained uniform by adjusted throttling of the outflow of clarified liquid through outlets from each sedimentation space.

**3,794,168**

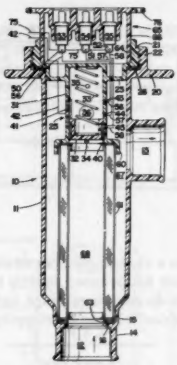
## FILTER WITH CONDITION INDICATOR

**Gerard T. Perkins, Detroit, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio**

**Filed July 31, 1972, Ser. No. 276,694**

**Int. Cl. B01d *35/14***

**U.S. Cl. 210—90** **5 Claims**



A filter assembly having a cylinder and piston movable therein by the pressure differential across the filter element and the piston carrying a metal ring to connect various indicator lights with a source of power at various pressure differentials to show the cleanliness condition of the filter element at various stages.

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**3,794,169**

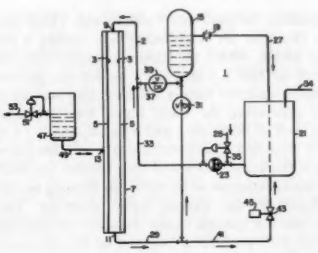
## APPARATUS FOR DISSOCIATING COLLECTED SOLIDS FROM A FILTRATION MEMBRANE

**Francis J. Sisk, and Robert F. Watson, Jr., both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed May 15, 1972, Ser. No. 253,489**

**Int. Cl. B01d *31/00***

**U.S. Cl. 210—140** **11 Claims**



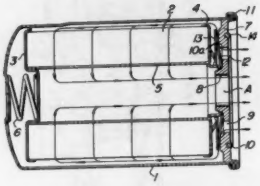
Apparatus for producing a rapid reduction in the pressure followed by a high velocity slug of liquid to dissociate collected solids from a filtration membrane surface utilizing an air accumulator, check valve and a timed rapid pressure blowdown to dislodge the collected solids and flush them from the membrane; or utilizing a high volume recirculating pump for recirculating liquid suffused with air and periodically stopping the pump for a predetermined time interval and draining liquid from adjacent the membrane, resulting in a reduction of the pressure, and then starting the recirculating pump to provide a high velocity flow of liquid to flush collected solids from the membrane.

3,794,170

## FILTER

Terumoto Yamaguchi, Anjo, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed Aug. 17, 1971, Ser. No. 172,433
Claims priority, application Japan, Aug. 29, 1970, 45-75664
Int. Cl. B01d 27/08
U.S. Cl. 210—136 1 Claim



A filter wherein a closure member of the filter consists of a single sheet of plate and secured directly to a cylindrical body of the filter, with its peripheral edge tightened to the open edge of said cylindrical body in overlapping relation.

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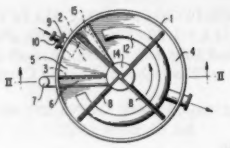
3,794,171

## APPARATUS FOR PURIFYING WASTE LIQUIDS

Hiroshiro Kimura, Kyoto; Seiji Yoshii, Hyogo, and Masao Tanaka, Gifu, all of Japan, assignors to Unitika Ltd., Amagasaki-shi, Hyogo, Japan

Filed May 24, 1972, Ser. No. 256,247
Claims priority, application Japan, May 24, 1971, 46-35688
Int. Cl. B03d 1/00
U.S. Cl. 210—205 8 Claims



An apparatus for purifying waste liquids which includes (a) a mixing chamber for introducing and mixing a pressurized gas-liquid phase, which substantially saturatedly dissolves a pressurized air into a waste liquid under the pressure, (b) a curved liquid chamber having a flat circular arcuate or curved spiral for separating the waste liquid into substances to be removed, such as flocs, etc., and a liquid, and (c) a scum outlet duct so disposed as to communicate with the curved liquid chamber at the upper portion of the chamber for discharging a scum of the substances to be removed floating on the surface of the liquid in the curved liquid chamber. The mixing chamber and the curved liquid chamber are separated from each other with partitions, but one of the partitions has an opening at the upper portion thereof so as to communicate the mixing chamber with the curved liquid chamber.

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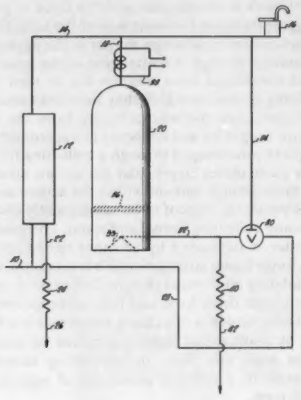
3,794,172

## STORAGE AND DISPENSING APPARATUS FOR A REVERSE OSMOSIS WATER PURIFICATION SYSTEM

Donald T. Bray, Escondido, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

Filed Aug. 29, 1972, Ser. No. 284,489
Int. Cl. B01d 31/00
U.S. Cl. 210—257 9 Claims

Storage and dispensing apparatus for a reverse osmosis water purification system includes a storage container or tank, in which purified water is stored, connected to a dispensing valve. The purified water in this storage tank is separated, as by a pressure transmitting diaphragm or a gradient barrier, from impure water used as feed for the purification unit and which is normally maintained also in the storage tank under pressure no greater than slightly above atmospheric for example, 10 psig more or less. Opening the purified water dispensing valve actuates a diaphragm valve which opens to supply impure water into the storage tank at an elevated pressure of, for example 40 to 100 psig more or less, thus pressurizing the purified water in the storage tank to a pressure substantially elevated above its normal storage pressure for delivery through the dispensing valve.



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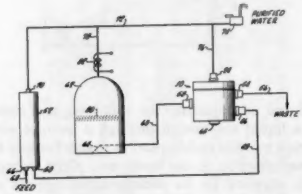
3,794,173

## VALVE FOR REVERSE OSMOSIS PURIFICATION AND STORAGE SYSTEM

Donald T. Bray, San Diego, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

Continuation-in-part of Ser. No. 284,489, Aug. 29, 1972. This application Oct. 4, 1972, Ser. No. 294,965
Int. Cl. B01d 31/00
U.S. Cl. 210—257 5 Claims



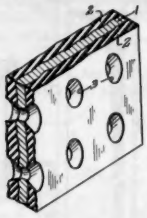

A valve for a water purification system operating by reverse osmosis which combines the functions of a pressure control for the blowdown or brine from the reverse osmosis module, and of a pressure control for a purified water container; and also acts as a pressure responsive valve to allow elevated pressure impure water to flow into the purified water container to elevate the pressure of purified water supplied to a dispensing valve when the dispensing valve is opened.

3,794,174

## POROUS METAL INSULATOR SANDWICH MEMBRANE

Glenn L. Booman, and Joseph R. Delmastro, both of Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 11, 1972, Ser. No. 216,947
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 9 Claims



A membrane for use in reverse osmosis and electrodialysis separation processes comprising a thin metal layer with a thin layer of insulator material on each side thereof, the membrane being porous with the pores having uniform radii from 5 angstroms and lower to approximately 100 angstroms, and means associated with the metal layer for controlling the surface charge density by external electrical circuitry whereby ionic transfer through the pores is controlled. The membrane is made by (*a*) depositing sequentially by radio-frequency sputtering technique 5–500 angstrom layers of platinum and silicon nitride on a 50–100 micron thick glass substrate to form a thin sandwich. Then (*b*) there are chemically etched 300 micron diameter holes in the glass substrate by using a mask of sputter-etched molybdenum metal with a thin molybdenum layer functioning as a stopping layer for the etching step. Next (*c*) the molybdenum masking layer is removed and, using the 300 micron holes in the substrate as a pattern, the molybdenum stopping layer is chemically etched through. Next (*d*) the resulting sandwich structure is irradiated with fission fragments to produce damage tracks in the $Si_3N_4$ layers, after which these layers are chemically etched along the fission fragment damage tracks. Finally (*e*) the metal membrane layer is chemically etched through, using the small holes in the surrounding $Si_3N_4$ dielectric layers as a mask.

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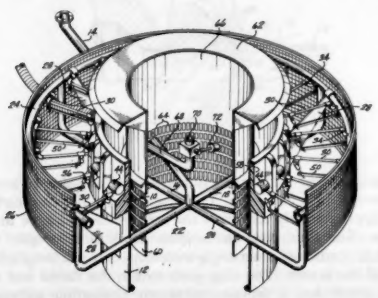
3,794,175

## OIL RECOVERY APPARATUS

Joe K. Stewart, 22818-102nd Pl. West, Edmonds, Wash. 98020

Filed May 15, 1972, Ser. No. 253,433
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 18 Claims



Floating oil is picked up by water jets and carried over a vertical wall into a receiving chamber. The water jet forming nozzles and the receiving chamber are parts of a floating vessel. The water jet forming nozzles are positioned to discharge upwardly through the floating oil. Float controlled mechanisms automatically maintain the jet nozzles properly oriented with respect to the receiving chamber wall.

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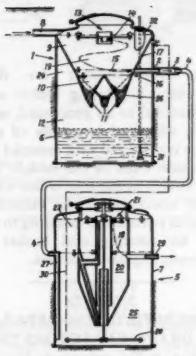
3,794,176

## MECHANICAL-BIOLOGICAL WASTE WATER PURIFICATION PLANT

Hans Schnyder, Wattenwylstrasse 29, Worb, Switzerland

Filed Nov. 30, 1972, Ser. No. 310,695
Claims priority, application Switzerland, Dec. 3, 1971, 17692/71
Int. Cl. C02c *1/26*
U.S. Cl. 210—242 10 Claims

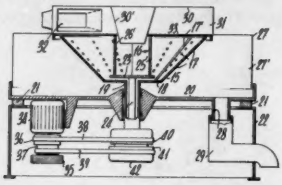


The plant is a pre-clarifying plant designed for connection to a clarifying plant or to a post-clarifying plant, and includes a pre-clarifying basin and a sludge digestion tank or zone arranged beneath and communicating with the basin. A feed inlet communicates with the upper portion of the basin and an adjustably positionable pipe, such as either a flexible pipe or a jointed pipe, is within the clarifying basin and has an inlet end communicating with a device, such as a weir, floating on the liquid in the basin. The outlet end of the discharge pipe extends through a side wall of the basin at a level below the feed inlet. The discharge pipe has a flow rate less than the flow rate of the feed inlet, as by having a relatively reduced cross sectional area or a restriction, so that the pre-clarifying basin has a first buffer zone whose height corresponds to the vertical distance between the feed inlet and the outlet end of the discharge pipe. The pre-clarifying basin is arranged inside the upper part of a tank whose lower part defines a sludge digestion zone, whereby the upper part of the tank defines a second buffer zone open at the bottom and delimited laterally by the wall of the tank and the side walls of the pre-clarifying basin, and at least one valve vents the upper part of the second buffer zone. The arrangement delays level equalization, as effected by communication by the pre-clarifying basin and the sludge digestion zone. The discharge pipe communicates with a post-clarifying plant having an activated sludge zone which communicates with the upper portion of the second buffer zone in the pre-clarifying plant. The post-clarifying plant has a clarifying basin communicating with the activated sludge zone and provided with a floating weir connected by a flexible or jointed discharge pipe to a clarified water outlet located some distance below the upper end of the post-clarifying basin. Sludge transferred by vacuum from the post-clarifying plant to the pre-clarifying plant is removed from the sludge digestion zone of the latter by a suitable pump.

## 3,794,177
## CONTINUOUSLY OPERATING CENTRIFUGAL HYDROEXTRACTOR PROVIDED WITH A MECHANICAL TIMER

**Berlando Lega, and Giannangiolo Cecchi, both of Firenze, Italy, assignors to Texfluid S.n.c. di G. Cecchi e B., Lega, Firenze, Italy**

**Filed Mar. 7, 1972, Ser. No. 232,400**
**Claims priority, application Italy, Mar. 23, 1971, 22121/71**
**Int. Cl. B01d *21/26***
**U.S. Cl. 210—377** **15 Claims**

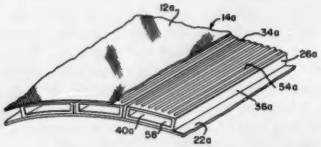


A centrifugal hydroextractor for fibrous material processing, comprising a rotating basket and a dispensing member for the material to be processed, which is rotatably mounted coaxially with and internally of said basket. The dispensing member is provided with material guide paths from the center to the side walls of the basket; at least one disc valve, closing the basket at the top, is fast with said dispenser and has a central aperture for the material supply and a number of peripheral ports corresponding to said paths. Drive means provided for rotating said basket and dispensing member with different angular velocities.

## 3,794,178
## ROTARY DRUM FILTERING APPARATUS AND UNITARY DRAINAGE SECTORS THEREFOR

**Oscar Luthi, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.**

**Filed Dec. 2, 1971, Ser. No. 204,103**
**Int. Cl. B01d *33/06***
**U.S. Cl. 210—404** **14 Claims**



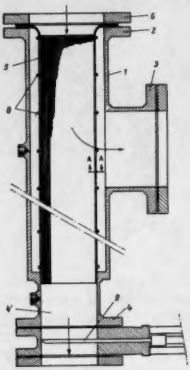
Unitary drainage sectors for rotary drum filtering apparatus, constructed whereby the drainage channels are enclosed within the sectors. Each sector may completely contain one or more of the drainage channels and/or the sectors may be formed such that, after assembly into a filter drum structure, laterally adjacent ones of the sectors cooperate to completely contain drainage channels.

## 3,794,179
## FILTRATION OF FLUIDS

**Charles Doucet, 20 Avenue Tronchet-Thonex, Geneva, Switzerland**

**Filed Aug. 31, 1971, Ser. No. 176,570**
**Claims priority, application Switzerland, Sept. 4, 1970, 13249/70; July 29, 1971, 11198/71**
**Int. Cl. B01d *29/30***
**U.S. Cl. 210—409** **2 Claims**

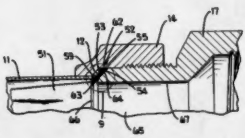
A filter tube having an inner cylindrical filter surface formed of longitudinal filaments with micro-grooves therebetween is supplied with fluid to be filtered through an inlet end towards a normally closed exhaust end. The fluid is normally diverted through a filtration zone in the filter surface, filtered matter being retained superficially on the filter surface whilst filtered fluid is extracted via an outlet. The filtration zone moves along the tube as the filter surface becomes clogged and an increase in the head loss when the entire filter suface is clogged actuates opening of the exhaust end to exhaust fluid with a flushing action which cleans the filter surface. Alternatively, the exhaust end can remain permanently open, a part of the fluid being diverted through the filter surface, and the non-diverted fluid cleaning the filter surface with a flushing action.



## 3,794,180
## FLARED CONE FILTER

**William C. Blocker, 1406 N. Butler Ave., Indianapolis, Ind. 46219**

**Continuation-in-part of Ser. No. 224,012, Feb. 7, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,757**
**Int. Cl. B01d *29/10***
**U.S. Cl. 210—445** **6 Claims**



A screen filter for filtering fluids. A conically-shaped screen is attached to a flare ring. The screen has a filtering surface area approximately ten times the area of the entrance to the screen. The flare ring has a continuous circular side wall which is positioned at an angle with respect to the longitudinal axis of the screen. The ring seats within the flared end of a tube which has a female connector projecting outwardly therefrom to threadingly engage a male connector. The male connector has a beveled inner end which seats within the ring

forcing the ring against the flared end of the tube. In the preferred embodiment, the screen extends into the flare ring which is crimped to the screen.

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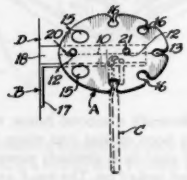
3,794,181
**SANITARY DISPOSABLE HOLDER FOR ARTICLES OF PERSONAL HYGIENE**
William H. Canham, 4836 Agnes Ave., North Hollywood, Calif. 91607
Filed Sept. 8, 1972, Ser. No. 287,554
Int. Cl. A47k 1/09; A47b 81/02
U.S. Cl. 211—65 10 Claims



A holder for toothbrush and other toilet or personal articles for use in a motel or hotel room or in a home guest room, comprises a wall bracket having a pair of holder studs; and a disposable sanitized holder disc having a pair of apertures to receive the studs with a force-fit and having peripheral slots and/or openings to receive the toilet articles; the disc being scored or otherwise weakened along a diameter intersecting the attachment apertures, such that the disc can be readily broken in halves for quick removal from the holder studs. The disc is replaced by a fresh, sanitized holder disc for the next guest to occupy the room.

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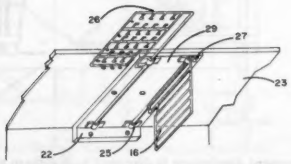
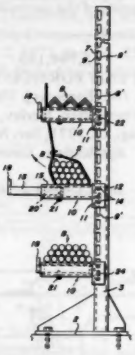
3,794,182
**STORAGE HANGING RACK**
John W. Royeton, 2120-B Paradise Rd., Las Vegas, Nev. 89105
Filed June 22, 1972, Ser. No. 265,358
Int. Cl. A47f 5/08
U.S. Cl. 211—94 6 Claims



A hanging rack device comprises a rod slideably received in a tubular sleeve, the rod having attached thereto a hanging rack and which sleeve includes guide means for directing the inclination of the rod and rack between vertical and horizontal depending on the extent in which the rod is received in the sleeve.

3,794,183
**ADJUSTABLE STORAGE RACK**
Thomas D. Colbridge, Chalk Hill, Pa., assignor to Rack Engineering Company, Connellsville, Pa.
Filed July 6, 1971, Ser. No. 159,791
Int. Cl. A47b 96/12; A47f 5/08
U.S. Cl. 211—176 4 Claims



There is disclosed an adjustable storage rack with vertically adjustable arms that are horizontally extensible and retractable to facilitate placement of material on or removal of material from the rack, especially where an overhead crane is used for this purpose.

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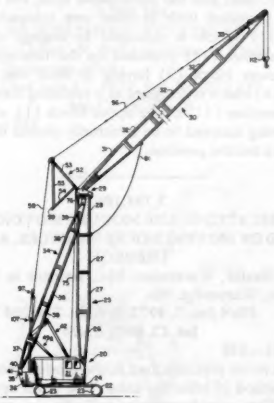
3,794,184
**CRANE**
Robert J. Higgins, Baton Rouge, La., assignor to Joyce Burroughs Torregrossa, Baton Rouge, La., a part interest
Continuation of Ser. No. 76,485, Sept. 29, 1970. This application Jan. 15, 1973, Ser. No. 323,732
Int. Cl. B66c 23/62
U.S. Cl. 212—46 A 12 Claims



A mobile crane for use in the construction industry. The crane includes a prime mover which may be a wheeled or endless track vehicle having the conventional superstructure with the power assembly mounted thereon. The crane has a main boom attached at its lower end in the conventional manner, which boom has attached at its upper ends two auxiliary support members, which members are removably at-

tached to the rear of the crane to provide a tripod structure which includes the main boom. A secondary or elevated boom is attached to the topmost portion of the main boom by a novel connecting means which permits the secondary boom to be elevated into working position atop the main boom. The crane is characterized in that it permits the utilization of substantially the full capacity of the main boom, even though extending the crane height to approximately twice the height of the main boom by means of the secondary boom.

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**3,794,185**

**CHANGE-OVER UNIT FOR HOISTING APPLIANCES**

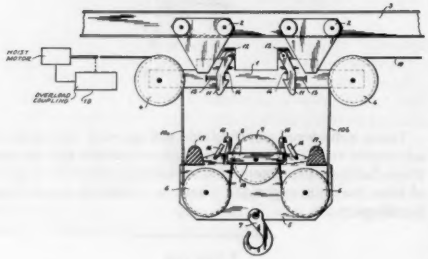
**Fridthof Berg Kroll, 108, Furesovej, Virum, and Berthold Gerhard Lang, 298, Vingetoften, Herlev, both of Denmark**

**Filed Aug. 23, 1971, Ser. No. 173,781**

**Claims priority, application Germany, Apr. 5, 1971, 2116544**

**Int. Cl. B66c** *21/00*

**U.S. Cl. 212—105** **5 Claims**



A change-over unit for hoisting appliances with a lower block suspended in a plurality of rope parts from an upper block, and with an intermediate block inserted between said blocks, the intermediate block being adapted to be arbitrarily coupled to the upper block or to the lower block to change the transmission ratio and the permissible load, the upper block (1) being provided with at least one releasable coupling member (11) which is arranged to engage at least one coupling member (15) provided on the intermediate block (8), the lower block (5) having at least one uncoupling member (16) which is designed as a releasing member for the coupling member (11) of the upper block (1), said coupling member being adapted to be arbitrarily placed in a releasing position or a neutral position.

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**3,794,186**

**PREFABRICATED HOUSE MODULE MOVING SYSTEM, METHOD OF MOVING HOUSE MODULES, AND UNITS THEREOF**

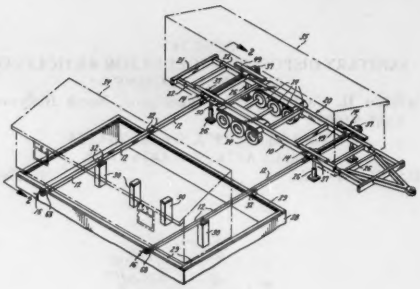
**Bobby G. Baxter, Warrenton, Mo., assignor to The Binkley Company, Warrenton, Mo.**

**Filed Jan. 7, 1972, Ser. No. 216,204**

**Int. Cl. B65g** *67/24*

**U.S. Cl. 214—1 H** **14 Claims**

This is a novel prefabricated house module moving system, a novel method of effecting same, and novel operating units thereof. The novel system includes a tractor-drawn, lengthwise adjustable transporter or trailer of chassis-type construction for moving house modules and the like from a fabrication center to a house foundation. At the foundation site two parallel roller tracks of connected segments are disposed under the first house module on the transporter between the transporter and a foundation for the house, and across the house foundation. Novel four-way roller pads are placed under the house module on the tracks which receive the house module for movement from the transporter to the house foundation under a lateral winching action. When in position above the foundation, the module is centered through maneuvering of the four-way movable adjustable pads, the module is jacked up and the roller pads are rolled from



beneath it and beneath a second house module on a transporter which has been moved into place beside the foundation. The second module is similarly moved onto the foundation, centered, and jacked up. The track and rollers are moved from beneath both modules and the two units are lowered onto the foundation.

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**3,794,187**

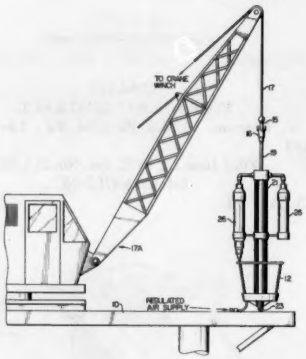
**SYSTEM AND APPARATUS FOR TRANSFER OF PERSONNEL/CARGO BETWEEN A MARINE PLATFORM AND CREW BOAT**

**Rudolph A. Begault, 1717 Disney Dr., Metairie, La. 70003**

**Filed Nov. 22, 1972, Ser. No. 308,825**

**Int. Cl. B65g** *67/58*

**U.S. Cl. 214—14** **6 Claims**

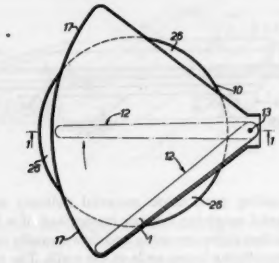


The present disclosure is directed to a system and apparatus for employing the compressibility of a gas (air) to provide a variable length, load carrying, member in a suspension system used for transporting a load (personnel, cargo, provision, etc.) from one point to another, between which points there is relative motion. This device incorporates the foregoing basic idea into a system which eliminates relative oscillatory motion between a load and an oscillating point to which the load is being transferred, while allowing relative linear motion between the load and the oscillating point.

## 3,794,188
## STORAGE SILOS AND BOTTOM UNLOADERS THEREFOR

**Dennis Denman, Princes Risborough, England, assignor to Austin Hoy and Company Limited, Buckinghamshire, England**

**Filed May 17, 1971, Ser. No. 144,020**
**Int. Cl. B65g** *65/24*
**U.S. Cl. 214—17 DA** **7 Claims**

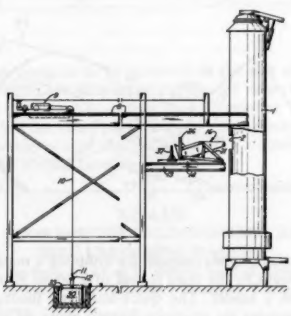


The invention provides a bottom unloader for a storage silo, of the kind comprising a sweep arm pivoted at a position adjacent to the silo wall and carrying a cutter chain which conveys the cut silage to a discharge outlet, wherein the problem of the silage trapping the sweep arm is overcome by arranging some of the cutters on the chain to be upwardly extending preferably to overlie the top of the arm. In an alternative embodiment the cutter teeth are pivoted on the chain so that when the chain is moved in one direction round the arm the teeth extend at right-angles to the chain and when the chain is moved in the opposite direction the teeth move into an inoperative position in which they extend parallel to the chain.

## 3,794,189
## CUPOLA CHARGING APPARATUS

**John C. Steighner, Jeannette, Pa., assignor to The Hockensmith Corporation, Penn, Pa.**

**Filed Sept. 29, 1971, Ser. No. 184,820**
**Int. Cl. F23k** *3/00*
**U.S. Cl. 214—18 SC** **2 Claims**

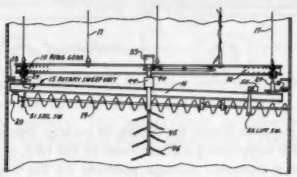


A normally reclining chute with a front discharge end adapted to be disposed beside a charging opening in the side of a cupola has means beneath its front end pivotally supporting it on a transverse axis. A charging bucket narrower than the back of the chute has laterally projecting trunnions at its bottom that can be lowered onto supporting means carried by opposite sides of the rear end of the chute, whereupon the bucket will tilt forward and down into the chute. The rear end of the chute then is raised to tilt the chute forward for discharging the contents of the bucket from the front end of the chute.

## 3,794,190
## SLANTED-AUGER SPREADER/UNLOADER FOR FEED STORAGE TANKS

**Charles F. Lambert, Jr., Louisville, Ky., assignor to Clayton & Lambert Manufacturing Company, Bucker, Ky.**

**Filed June 2, 1972, Ser. No. 258,978**
**Int. Cl. B65g** *65/32, 65/38*
**U.S. Cl. 214—17 CA** **12 Claims**



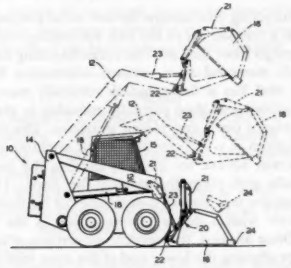
A spreader/unloader composed of a ring gear, a rotary sweep unit of the diametric auger type and a hole former, has its diametric auger inclined and connected for rotation in one direction such that, during both filling and emptying, the augers always move the silage into the auger space between them and uphill along that space. With this arrangement, their upper slanted halves or radius sections operate as an "uphill" spreader during filling while their lower slanted halves operate as an "uphill" unloader during emptying.

It also has a hole former comprising: a vertical member depending from the frame along the center axis of the ring gear; cutter chains centered on said member; and motorized means for whirling said cutter chains horizontally. By whirling the cutter chains during the filling operation or between the filling and emptying operations, a center hole of uniform diameter can be formed entirely through the height of the silage column to ready the installation for the unloading or emptying operations.

## 3,794,191
## HIGH DUMP BUCKET LINKAGE

**Patrick Kuhn, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.**

**Filed July 17, 1972, Ser. No. 272,237**
**Int. Cl. E02f** *3/28*
**U.S. Cl. 214—774** **5 Claims**



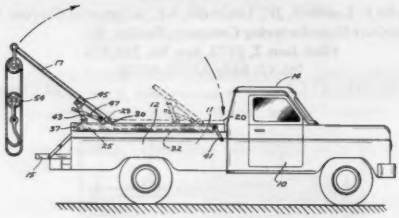
A bucket linkage for an end loader type vehicle which effects upward and forward dumping movement of the bucket about an axis adjacent the cutting edge utilizing link members so arranged as to obtain a high ratio of bucket travel to cylinder displacement for greater lift height and bucket reach characteristics.

3,794,192

## PICKUP TRUCK HOIST SUPPORT

Charles D. Monson, Coon Rapids, Minn., assignor to Inventors Engineering, Inc., Minneapolis, Minn.

Filed June 17, 1970, Ser. No. 46,899
Int. Cl. B60p 1/54
U.S. Cl. 214—75 H 7 Claims



A folding support frame for boxes of pickup trucks which can be used for supporting a chain hoist or the like, and which will fold into a compact storage position on the top of the pickup box without having any members interfering with the box capacity.

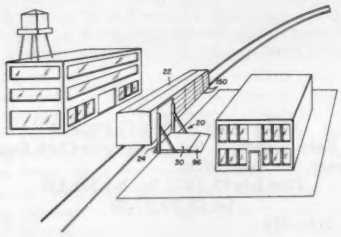
The support pivots to its operative position and has automatically raisable support linkages. The support frame can be moved longitudinally in direction along the box to place items held by a hoist into the pickup truck box.

3,794,193

## CARGO HANDLING MECHANISM

Warren O. Fleenor, 8250 W. Bergen Rd., Leroy, N.Y. 14482

Filed Dec. 17, 1971, Ser. No. 209,109
Int. Cl. B60p 1/44
U.S. Cl. 214—75 G 10 Claims



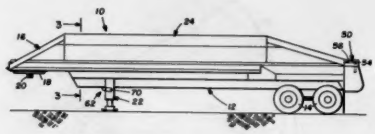
A cargo handling mechanism for use on an enclosing structure, such as a railroad car or the like, for loading cargo into or unloading cargo from the car. The cargo handling mechanism is preferably mounted in a vertical orientation for lateral movement, and has a door that is vertically movable to a selected position, and then pivotally movable in the selected position between open and closed positions. The cargo handling mechanism is a self-contained unit containing the controls and power source for laterally moving the mechanism, and vertically and pivotally moving the door. The lateral movement of the mechanism is desirable for horizontally aligning the door with a desired cargo space in the enclosing structure. Once aligned, the vertical movement of the door is desirable for aligning the lower end of the door with the cargo-supporting surface in the enclosing structure. The door is pivotally movable from a normaly closed position, in which it blocks entry to the enclosing structure and assumes a compact position for transport and handling of the mechanism, to an open position, in which the door forms a platform over which cargo may be loaded into or unloaded from the enclosing structure.

3,794,194

## SELF-UNLOADING MATERIAL DELIVERY SYSTEM

John H. Holland, Norman, Okla., assignor to Arkansas Rock and Gravel Company, Murfreeboro, Ark.

Filed Dec. 1, 1971, Ser. No. 203,739
Int. Cl. B60p 1/38
U.S. Cl. 214—83.36 13 Claims



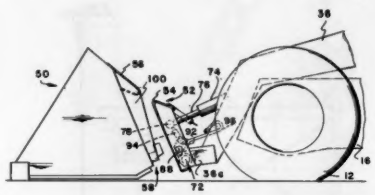
A self-unloading particulate material delivery system includes a material receiving hopper comprised of a front wall and side walls that slope inwardly and downwardly and a floor positioned beneath the lower ends of the walls. The rear of the hopper is open and the side walls and the floor extend beyond the rear of the hopper to form a discharge chute. A conveyor includes a pair of drive chains and a plurality of flights connected between the drive chains for movement thereby around a course extending through the hopper and the chute to unload material from the hopper. A flow indicator comprises a plate pivotally supported at the rear of the chute for actuation by material moving therethrough under the action of the conveyor to provide an output indicative of the rate of flow of material out of the delivery system. A flight locator includes a lever mounted in the path of the flights of the conveyor to provide an output indicative of the positioning of the conveyor flights relative to the course of the conveyor.

3,794,195

## QUICK-ATTACHING MECHANISM

James T. Clevenger, Lancaster, and John L. Stohler, Ephrata, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 9, 1971, Ser. No. 178,996
Int. Cl. E02f 3/70
U.S. Cl. 214—145 11 Claims



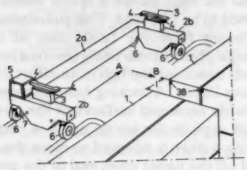
A quick-attaching mechanism for coupling a material handling implement to the remote end of a boom structure extending from a loader. The quick-attaching mechanism includes a mounting lip or cavity formed along an upper rear portion of the material handling implement and particularly adapted to receive an upper edge of a mounting plate that is pivotally mounted to the remote end of the boom structure. In addition, an over-center wedging mechanism is provided with said mounting plate for engagement with a pair of hook members that are fixed to said material handling implement and extend rearwardly therefrom, through openings within said mounting plate.

3,794,196

## CARRIER FOR CONTAINERS

Matti Terho, Haikankatu 10, Naistenmatka, and Reijo Tutto, Peltolamminkatu 2D25, Tampere, both of Finland

Continuation-in-part of Ser. No. 85,920, Nov. 2, 1970. This application Jan. 18, 1972, Ser. No. 218,710
Int. Cl. B60p 1/64
U.S. Cl. 214—390 1 Claim



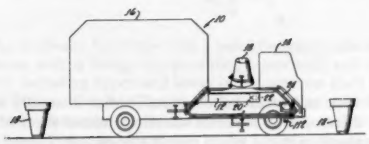
A carrier for the loading and unloading of elongated freight containers includes a U-shaped body consisting of beams forming an inner space corresponding to the size of the container, and hydraulic means gripping and lifting the container. The U-shaped body has four wheels at its corners with hydraulic motors and steering means, an engine and a hydraulic pump driven by the engine and operatively connected with the hydraulic wheel motors, the steering means and the hydraulic gripping and lifting means. The operative connections of the pump include control means.

3,794,197

## NON-STOP REFUSE COLLECTION SYSTEM

Marcel G. Stragier, 8201 Monterey Way, Scottsdale, Ariz. 85251

Continuation of Ser. No. 15,421, March 2, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,756
Int. Cl. B65f 3/02
U.S. Cl. 214—302 24 Claims



A device designed to be mounted on the side of a garbage pick-up vehicle and adapted to engage and invert refuse containers to transfer the contents thereof into the bed of said vehicle while the vehicle is in motion, allowing the vehicle to collect garbage placed along a roadway in a non-stop operation without manual handling.

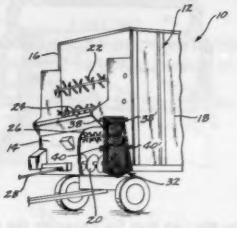
3,794,198

## SAFETY DOOR FOR THE UNLOADING MECHANISM OF SELF-UNLOADING WAGONS

Wesley F. Buchele, and Leo C. Peters, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed June 12, 1972, Ser. No. 261,930
Int. Cl. B60p 1/40
U.S. Cl. 214—519 5 Claims

A safety door for the discharge opening of a self-unloading wagon is disclosed herein. The wagon includes a material receiving box having a first conveyor therein for conveying the material towards one end thereof. A cross conveyor is mounted at the one end of the box for conveying the material outwardly from the box through the lower end of a discharge opening formed in the side of the box. A material beater means is rotatably mounted in the box above the cross conveyor. The safety door extends across the discharge opening to prevent the operator from reaching inwardly through the discharge opening. The safety door is self-closing and is opened by the material being discharged outwardly through the discharge opening.

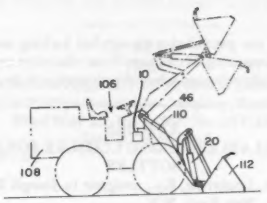


3,794,199

## HYDRAULIC SELF-LEVELING DEVICE FOR A LOADER BUCKET

Richard J. Bromberek, Lockport; Robert J. Oliver, Westmont; Rudolph E. Yeh, Elmhurst, and Gale A. Holloway, Joliet, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 2, 1972, Ser. No. 249,641
Int. Cl. E02f 3/86
U.S. Cl. 214—763 7 Claims



A mechanically actuated single valve which has a sequence of opening and closing port connections controlled by a timed spool. The timing of the spool in conjunction with a priority system is such that upon actuation of the self-leveling valve, manual rollback of the bucket is no longer possible.

3,794,200

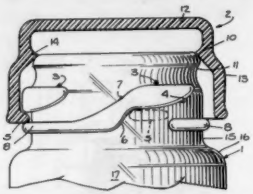
## SAFETY CLOSURE AND PACKAGE

Walter J. Marks, Mississauga, Ontario, Canada, assignor to Anchor Cap & Closure Corporation of Canada, Limited, Toronto, Ontario, Calif.

Filed July 25, 1972, Ser. No. 274,988
Claims priority, application Canada, July 26, 1971, 119114
Int. Cl. A61j 1/00; B65d 55/02
U.S. Cl. 215—9 24 Claims

A safety closure is described for use in sealing glass or similar containers and which may be used as a regular easily removed twist-on twist-off closure or, alternatively, at the option of the user as a locked safety closure for preventing removal of the closure cap be children. The container and the closure cap have cooperating lugs which engage in the usual manner for permitting the closure cap to be used in an unlocked or freely removable manner. A sealing bead is included

in the cap for sealing the package in the unlocked use. A pair of cap engaging grooves are provided on the container finish



in addition to the cap lugs for engaging the sealing bead and the cap lugs in the locked position and which act to prevent removal of the cap by children.

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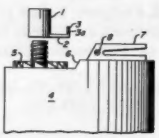
**3,794,201**
**SECURELY CLOSED CONTAINERS**

**Herbert W. Galer, Circleville, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa.**

**Filed Feb. 25, 1971, Ser. No. 118,798**
**Int. Cl. B65d** *55/02*
**U.S. Cl. 215—9** **9 Claims**



Containers are provided with ratchet locking mechanisms that prevent loosening of closures from vibration or otherwise but may be easily released when the closure is to be removed.

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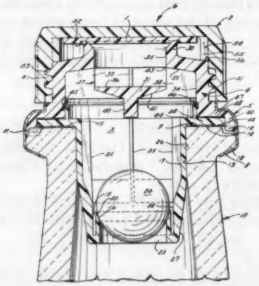
**3,794,202**
**NON-REFILLABLE POURING CLOSURE FOR LIQUOR BOTTLES**

**Earl D. Unger, Louisville, Ky., assignor to Joseph E. Seagram & Sons, Inc., New York, N.Y.**

**Filed Mar. 26, 1971, Ser. No. 128,274**
**Int. Cl. B65d** *49/02*
**U.S. Cl. 215—22** **16 Claims**



A non-refillable pouring closure for liquor bottles is provided with a check valve disposed interiorly of the bottle neck. This valve includes a ball cage within which a ball is adapted to seal the opening in the valve seat defined by the cage to prevent spurious liquids to be poured into the bottle following removal of the legitimate contents of the bottle. The ball is adapted to be advantageously unseated when it is desired to pour the legitimate liquor in the bottle for consumption upon tilting of the bottle to the desired pouring angle. Guide ribs on the interior of the cage assures proper movement of the ball therein between the ball valve opening and closing positions. A pouring spout or cowl extends upwardly and outwardly from the ball cage to facilitate pouring of the bottle contents. The cowl and the cage define a space within which a guard plate is adapted to be disposed. This guard plate permits pouring of the liquor from the bottle but, at the same time, prevents foreign objects from being inserted into the cowl with a view towards unseating the ball in an effort to refill the bottle with a spurious liquor. A locking band engages with the open end of the bottle neck and surfaces of the cowl to secure the cowl and ball cage to the bottle neck. A removable closure cap containing a liner is adapted to close the bottle and particularly seal off the upper open end of the cowl. This closure cap is removed when it is desired to pour or drain the liquor contents of the bottle.

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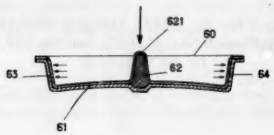
**3,794,203**
**THERMOPLASTIC LINED HOLLOW METAL BODIES AND METHOD**

**Bernard Baumann, Paris, France, assignor to CEGEDUR Societe de Transformation de L'Aluminium PECHINEY, Paris, France**

**Filed Sept. 18, 1970, Ser. No. 73,446**
**Claims priority, application France, Sept. 18, 1969, 69.31788**
**Int. Cl. B65d** *7/02, 25/14, 87/12*
**U.S. Cl. 220—5 A** **1 Claim**



Fuel tank and other hollow metal bodies internally lined with a thermoplastic material wherein a heated sheet of the thermoplastic material is laid over the previously formed hollow metal body with the plastic sheet in engagement with the edge of said body and the sheet is deformed to correspond to the internal shape of said body by drawing a vacuum through a foraminous vacuum tubing which remains entrapped between said sheet and body to become a part thereof and which includes the addition of porous and permeable bodies connected to the vacuum system for formation of said sheet liner with sections which extend from the metal body, and fuel tanks formed by the joinder of such lined body portions in sealed relation along the meeting edges of the plastic lining.

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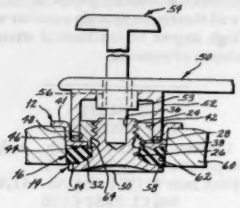
**3,794,204**
**CLOSURE DEVICE**

**Eugene E. Wehmeyer, c/o Provident Tool Engineering Co., 4501 Swan Ave., St. Louis, Mo. 63110**

**Filed Aug. 13, 1971, Ser. No. 171,641**
**Int. Cl. B65d** *39/12*
**U.S. Cl. 220—24.5** **13 Claims**

A closure device for sealing the opening of a refillable container, the closure device including spaced pressure members having a soft resiliently deformable washer member sandwiched therebetween, and a tightening member engageable with a neck portion of one of the pressure members for drawing the pressure members together. Tightening apparatus for

the closure device includes a wrench engageable with the tightening member and a key member engageable with the



pressure member neck portion for holding the closure device in fixed position during movement of the tightening member by the wrench.

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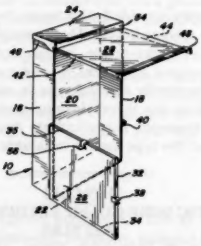
**3,794,205**

**RAINTIGHT ENCLOSURE WITH MULTIPLE COVERS**

**William T. Cantrell, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.**

**Filed July 25, 1972, Ser. No. 274,923**
**Int. Cl. B65d** *51/18*
**U.S. Cl. 220—29** **7 Claims**



An enclosure has a rear wall, a pair of opposite side walls, a bottom wall, a flange cap providing a top wall, and a front cover including upper and lower cover portions each having side flanges. The side flanges of the upper cover portion are pivotally connected to the enclosure side walls at their upper front portions, one side flange of the lower cover portion is pivotally connected to one enclosure side wall and the upper cover portion overlaps the lower cover portion when the lower cover portion and upper cover portion are closed.

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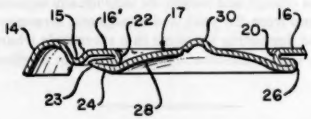
**3,794,206**

**FRANGIBLE OPENING MEANS FOR A CONTAINER LID**

**John W. De Line, 6011 E. Sixth Ave., Denver, Colo. 80220, and Nobel N. Ida, Boulder, Colo., assignors to John W. De Line, Denver, Colo., by said Ida N. Nobel**

**Filed Apr. 6, 1972, Ser. No. 241,642**
**Int. Cl. B65d** *17/00*
**U.S. Cl. 220—27** **15 Claims**



A container lid for beverage containers and the like has a tear strip formed as a unitary part of the closure which can be at least partially separated from the closure by pressing it downwardly to displace it into the container about a hinge point in such a way as to leave a protected opening for removal of the contents from the container.

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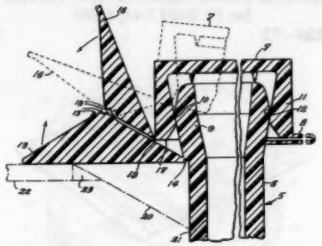
**3,794,207**

**SNAP-ON CLOSURE OPENING DEVICE**

**Charles J. Hunt, Morning View, Ky., assignor to Vulcan Corporation, Cincinnati, Ohio**

**Filed Aug. 9, 1972, Ser. No. 279,220**
**Int. Cl. B65d** *43/16, 51/10*
**U.S. Cl. 220—36** **4 Claims**



An opening device for removable, snap-on container closures comprising a pair of pivotably associated tabs, one tab being hingedly connected to a container part and the other tab connected to the container closure whereby the container and the closure attached ends of the tabs work away from each other to open the container when the opposed free ends of said tabs are manual moved toward one another.

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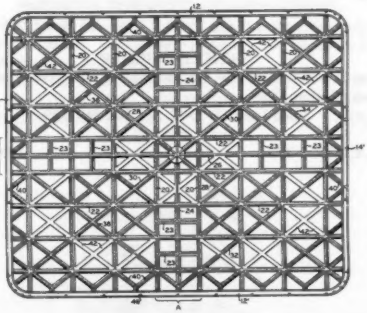
**3,794,208**

**TRAY**

**Gale S. Roush, and Hugh B. Fraser, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed May 26, 1972, Ser. No. 257,230**
**Int. Cl. B65d** *7/42*
**U.S. Cl. 220—66** **17 Claims**



A tray comprising upstanding side and end walls and a gridwork bottom disposed between the lower edge portions of said walls. Each of said walls preferably comprises an essentially vertical lower section and an outwardly sloping upper section. Said gridwork bottom comprises a plurality of intersecting struts which form rows of rectangles generally parallel with said walls. Reinforcing strut members are provided in intersecting centrally disposed rows of said rectangles. A trans-

verse strut member in at least one of said centrally disposed rows of rectangles provides a location for a denesting device to hook onto the gridwork bottom and remove a tray from a stack of nested trays.

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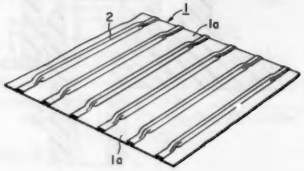
**3,794,209**
**COVER PLATE FOR COVERING THE OUTER PERIPHERY OF A WIRE REEL**

**Toru Mizuguchi; Mitsuo Fujita, and Yoshiaki Suzuki, all of Yokohama, Japan, assignors to The Furukawa Electric Company Limited and Toko Kogyo Kabushiki Kaisha, both of Tokyo, Japan**

**Filed July 26, 1971, Ser. No. 166,229**
**Claims priority, application Japan, Aug. 1, 1970, 45-67418; Aug. 25, 1970, 45-84048; Aug. 25, 1970, 45-84049**
**Int. Cl. B65d** *7/46, 85/66*
**U.S. Cl. 220—72** **3 Claims**




A cover plate for covering the outer periphery of a wire reel comprising an elongate metal plate including on its inner surface a plurality of reinforcing grooves extending continuously across the metal plate and separated in the lengthwise direction of the metal plate, said groove being dimensioned to have a depth sufficient to be deformed into two symmetrically inwards re-entrant bent portions when subjected at the intermediate of the opposite side walls of the groove to an external force produced when the bottom portion of the groove is depressed and in which the re-entrant bent portions are deformed into a flat laminated surface by further depression at opposite side edges of the groove. A method of manufacturing said cover plate, comprising the steps of forming said grooves, depressing the bottom portion of said grooves to form said two symmetrically inwards re-entrant bent portions, and further depressing said re-entrant bent portions into said flat liminated surface. A cover plate manufacturing apparatus comprising a press bed, a pair of restrictable members and a plunger member.

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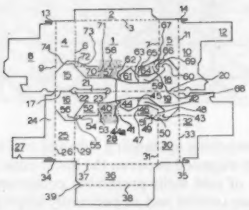
**3,794,210**
**ARTICLE CARRIER**

**James T. Stout, Doraville, Ga., assignor to The Mead Corporation, Dayton, Ohio**

**Filed June 12, 1972, Ser. No. 261,729**
**Int. Cl. B65d** *85/00*
**U.S. Cl. 220—113** **10 Claims**



A basket style article carrier having bottom, side and end walls and a multi-ply medial handle of the telescoping type secured at its ends to the end walls of the carrier is provided with partition structure which in effect is struck from the handle panels, a part of which is foldably joined thereto and another part of which is foldably joined to the top edge of the adjacent side wall thereby to provide a carrier which is characterized by a high degree of mechanical strength and which requires a minimum of material.

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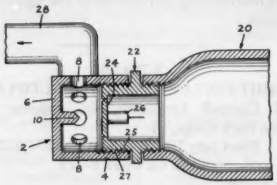
**3,794,211**
**CAP ASSEMBLY**

**Yogendra S. Loomba, Roseville, Mich., assignor to Allied Chemical Corporation, New York, N.Y.**

**Filed June 9, 1971, Ser. No. 151,401**
**Int. Cl. B65d** *47/36*
**U.S. Cl. 220—89 A** **2 Claims**




A cap assembly provided with means for attachment to the outlet of a gas storage bottle. The assembly, which totally encloses the outlet of the bottle, is provided with a plurality of equidistantly spaced apertures. In the event that the closed outlet is inadvertently opened, gas is released through the apertures without any thrust development. The cap assembly of the instant invention is particularly designed for use with a gas generator of the type used in inflatable gas bag assemblies.

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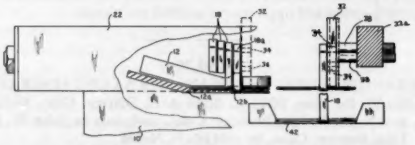
**3,794,212**
**AUTOMATIC WIRE CLAMP FEEDING DEVICE FOR BOTTLES**

**Mathias M. Check, Greenwich, Conn., assignor to Alfred E. Miller, Greenwich, Conn., a part interest**

**Filed Apr. 27, 1972, Ser. No. 247,961**
**Int. Cl. B65g** *59/04*
**U.S. Cl. 221—212** **6 Claims**



An automatic device for feeding loop-shaped wire clamps for application to the necks of bottles of wine, champagne, and the like. The device includes a chute for holding a nested pack of wire clamps and means for individually separating the leading clamp from the pack and a magnetic arrangement for carrying and depositing the same in a receptacle whereby the wire clamp can be automatically removed for application to the bottle.

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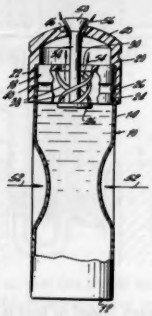
**ERRATUM**

For Class 221—310 see:
Patent No. 3,794,214

3,794,213
**TUBE MOUNTED APPLICATOR**
Gilbert Schwartzman, 20 Wilmot Cir., Scarsdale, N.Y. 10583
Filed Apr. 17, 1972, Ser. No. 244,561
Int. Cl. B65d *35/54*
U.S. Cl. 222—107 1 Claim



An applicator comprising a squeezeable container, a cap surrounding the upper part of the container and having an opening therein forming a valve seat. The cap has an inwardly extending flange on the inner surface thereof. A mounting ring is concentric with the container and has a groove therein and is force fitted in the container with the flange being locked in the upper part forcing a portion of the upper part into the groove thereby holding said upper part, said mounting ring, and said container in assembled condition. An enlarged valve head connected to the mounting ring and located above the opening and engageable with the valve seat to close the opening is formed by heat and pressure after the step of force fitting.

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3,794,214
**PACKAGE FOR AUTOMATIC PENCIL LEADS**
Lasse Kuparinen, Hamburg, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.
Filed Jan. 26, 1973, Ser. No. 326,902
Claims priority, application Germany, Jan. 27, 1972, 7202879
Int. Cl. B65d *83/02*
U.S. Cl. 221—310 7 Claims

A lead package for leads of the type used in "automatic" pencils. Particularly, a housing having a bifurcated fork portion which locks a slidable lead storage portion within the housing. The lead storage portion may be reciprocated longitudinally so as to split the bifurcated portion of the housing and thus extend the ends of the leads for removal outwardly of the front end of the housing.

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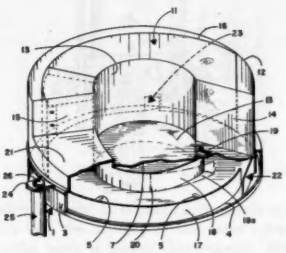
3,794,215
**POWDER COMPACTING APPARATUS FOR USE WITH A MECHANISM FOR AUTOMATICALLY MEASURING AND DISPENSING UNIT QUANTITIES OF DRY POWDER**
Joseph C. Osterhaus, Port Jefferson, N.Y., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed May 12, 1972, Ser. No. 252,795
Int. Cl. B65b *13/20*
U.S. Cl. 222—1 19 Claims



Powder compacting apparatus for use with a mechanism for automatically measuring and dispensing unit quantities of dry powder comprising means for transporting said dry powder through a tunnel having a progressively diminishing cross-sectional area wherein said dry powder is compacted to a uniform density immediately preceding and during the process of the measuring of the unit quantities of the dry powder.

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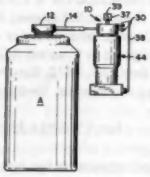
3,794,216
**PRESSURE POWERED AEROSOL TIMER**
Willard E. Buck, deceased, late of Lake Havasu City, Ariz. (by Gwynne Buck, executrix), assignor to Spray-A-Matic Products, Inc., New York, N.Y.
Filed Feb. 22, 1973, Ser. No. 334,759
Int. Cl. B65d *83/14*
U.S. Cl. 222—70 8 Claims



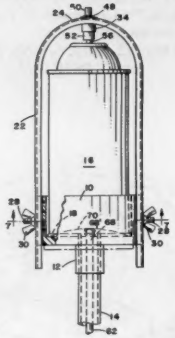
A pressure powered timer for aerosol spray cans operates automatically to periodically spray the contents of the can at desired, predetermined intervals, the pressure within the can being utilized to actuate the timer.

3,794,217

## ELEVATED SPRAY DEVICE

Carl J. Munchel, 17 Maple Rd., York, Pa. 17403

Continuation of Ser. No. 86,760, Nov. 4, 1970, abandoned.
This application Apr. 12, 1972, Ser. No. 243,314
Int. Cl. B65d 83/14
U.S. Cl. 222—174 20 Claims



A device adapted to support and actuate, selectively, either a pressurized discharge type container or one equipped with a self-contained pump to adapt the same for operation at extended locations relative to the operator, either vertically or otherwise. Clamping means are adjustable to accommodate containers of either type of different heights, diameters and shapes, and elongated handle means extend from the clamping means and include a push rod to move the container relative to its clamping and supporting means to cause opening of the valve of a pressurized container or the pump of a container which includes a pump, and effect discharge of the contents either as a solid stream, atomized spray or a mist at extended distances from the operator. Adapter means and adjustable clamping means selectively permit the reception of various sizes of push caps or tubular valve members or operating heads of the containers.

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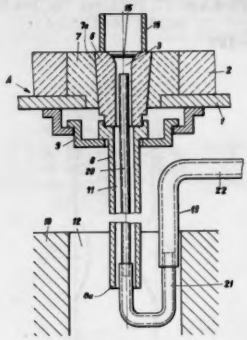
3,794,218

## METHOD AND APPARATUS FOR OPENING A SEALING ELEMENT, WHICH CANNOT BE ACTUATED, OF THE BOTTOM NOZZLE OF A CASTING VESSEL

Mareo Yanagida; Susumu Sakanoue; Hideyuki Nakagawa, all of Kurashiki, Japan, and Werner Bruderer, Feldmeilen, Switzerland, assignors to Concast AG, Zurich, Switzerland

Filed Sept. 25, 1972, Ser. No. 291,919
Claims priority, application Switzerland, Sept. 27, 1971, 14059/71
Int. Cl. B22d 32/00
U.S. Cl. 222—1 8 Claims

A method of and apparatus for opening a sealing element, which cannot be actuated, of the bottom nozzle of a casting vessel, especially during continuous casting, wherein the steel which issues is passed through an immersion tube into the next steel receiver. According to the invention an oxygen infeed or lead is introduced through the hollow compartment or cavity associated with the casting jet into the region of the sealing element, the casting vessel together with the immersion tube is brought into the casting position, after introducing the steel at the beginning of casting the sealing element is lanced or burned and the oxygen infeed or lead is removed through the steel which issues from the hollow compartment or cavity associated with the casting jet.



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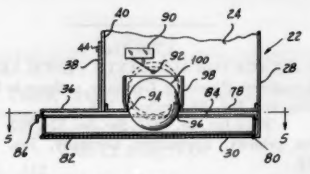
3,794,219

## CHARGED CUP BEVERAGE MERCHANDISING MACHINE

Irving Pitel, Edison, and Richard J. Mueller, Mountain Lakes, both of N.J., assignors to Rowe International, Inc., Whippany, N.J.

Filed Sept. 6, 1972, Ser. No. 286,576
Int. Cl. B67d 1/16
U.S. Cl. 222—108 15 Claims



A charged-cup beverage merchandising machine in which in response to the deposit of money a cup delivery mechanism is actuated to deliver a cup containing a charge of dry beverage concentrate to the drain area of a delivery shelf, and then to open a valve to deliver a charge of water to the cup to make the beverage and in which a shallow tray removably supported below the shelf receives a float adapted to operate a switch to disable the machine when the level of liquid overflow or drippings accumulated in the tray is above a predetermined level and which tray can be slid clear of the cabinet for emptying and can be reinserted without disassembly of any of the float or float switch-actuating mechanisms.

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3,794,220

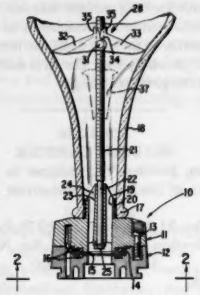
## TOGGLE NECKLOCK

Howard C. Valle, Doylestown, Pa., assignor to Auto Bar Systems Corporation, New York, N.Y.

Continuation of Ser. No. 06,428, Jan. 28, 1970, abandoned.
This application Apr. 5, 1972, Ser. No. 241,472
Int. Cl. B67d 5/32
U.S. Cl. 222—153 1 Claim

A bottle dispenser mounted on the open end of a bottle has a rotatable threaded shaft extending into the neck of the bottle with a toggle nut threaded onto the shaft for combined rota-

tion and translation movement and a pair of oppositely extending wings pivotally mounted on the toggle nut. The wings are expanded to engage the inner surface of the bottle neck



and the shaft rotated so that the toggle nut moves therealong to lockingly engage the expanded wing members against the inner surface of the bottle neck.

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**3,794,221**

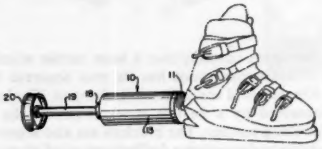
## CARTRIDGE FOR STORING, MIXING AND DISPENSING A PLURALITY OF INGREDIENTS

**Fritz Hostettler, Freehold, N.J., and Heinz O. Herzog, Chappaqua, N.Y., assignors to Inter-Polymer Research Corporation, Farmingdale, N.J.**

**Filed Dec. 6, 1971, Ser. No. 204,997**

**Int. Cl. B67d** *1/08*

**U.S. Cl. 222—190** **10 Claims**



A cartridge for storing separately a plurality of ingredients, at least one of them in a separate frangible envelope within the cartridge, and then for mixing the ingredients and expelling the mixture, includes a cylindrical container apertured at each end, a piston, a piston rod slidably passing through one end of the container and through the piston and having a substantially fluid tight seal with the piston and with the side walls of the container, a mixing element affixed to the rod on the side of the piston remote from that one end of the container, and means to couple the piston to the piston rod to permit drive of the piston lengthwise of the container by the piston rod after rupture of the envelope and mixture of the ingredients by the mixing element.

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**3,794,222**

## DOSAGING DEVICE FOR LIQUIDS AND PASTE-LIKE SUBSTANCES

**Horst Loewenthal, Tiengen, Germany, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland**

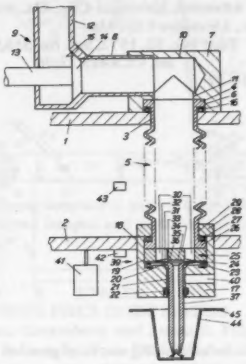
**Filed Mar. 30, 1972, Ser. No. 239,509**

**Claims priority, application Switzerland, Apr. 6, 1971, 4993/71**

**Int. Cl. G01f** *11/08*

**U.S. Cl. 222—207** **3 Claims**

A dosaging device for liquids and paste-like substances is provided with an inlet valve mounted on a horizontal plate which also has attached thereto the upper end of a vertically disposed and vertically compressible bellows. The inlet valve introduces the liquid or paste-like substance into the upper end of the bellows the lower end of which is attached to a horizontal plate carrying a discharge valve and is vertically movable up and down with respect to the other or upper horizontal plate. In operation the inlet valve is opened and the



discharge valve is closed to introduce the liquid or the paste-like substance into the bellows by said inlet valve when the lower horizontal plate is moved downwardly, and the inlet valve is closed and the discharge valve is opened to permit the discharge valve to introduce the liquid or the paste-like substance into a cup-like container when the lower horizontal plate is moved upwardly.

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**3,794,223**

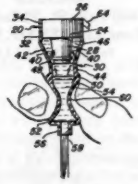
## CONTAINER DRAINAGE VALVE

**Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Walpole, Mass.**

**Division of Ser. No. 172,528, Aug. 17, 1971, Pat. No. 3,750,914. This application Nov. 28, 1972, Ser. No. 310,050**

**Int. Cl. B65d** *47/06*

**U.S. Cl. 222—529** **10 Claims**



A reciprocating valve for a container, the valve including a stem and seat. The stem is movable between an outer position with the stem spaced from the seat to permit fluid flow from a cavity in the container through the valve, and an inner position with the stem sealingly engaged against the seat to prevent passage of fluid. A flexible tube extends from the valve and has a sufficient length to permit compression of the tube by a user's fingers to regulate the passage of fluid through the tube. A cap is removably positioned on an orifice adjacent the outer end of the tube to selectively close the orifice, and a strap connects the cap with a portion of the valve intermediate a reciprocating portion of the valve and the container. The strap is sufficiently long to permit placement of the cap on the orifice in the inner valve position, but is sufficiently short to prevent movement of the valve from its inner to outer position without removal of the cap from the orifice.

## ERRATA

For Classes 222—218 and 222—471 see:
Patents Nos. 3,794,234 and 3,794,235

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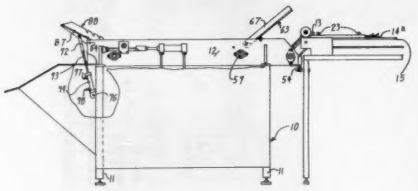
### 3,794,224
### APPARATUS FOR FOLDING AND STACKING GARMENT PARTS

Fletcher D. Adamson, Alexander City, Ala., assignor to Russell Mills, Inc., Alexander City, Ala.

Filed Dec. 11, 1972, Ser. No. 313,928
Int. Cl. A41h *33/00*
U.S. Cl. 223—37 10 Claims



Apparatus for assembling stacks of garment parts such as T-shirt sleeves, which stacks of sleeves are adapted to be transported to a sewing station. The apparatus embodies means adapted to receive a hemmed sleeve blank from an automatic sewing machine which is delivered with the hem portion folded over the body of the sleeve blank, then to unfold the same and press the seam. Subsequent to this operation, the sleeve blank may be folded substantially at its mid-point, upon itself, essentially while in motion on a conveyor. Following the folding step the folded, transversely outstretched blank is lifted bodily from the conveyor and placed in inverted position on a stacker until a stack of a given number is formed. Then, means is provided to dump the entire stack by sliding the same off the stacking station, onto a conveyor or the like which delivers the thus stacked, folded sleeves to a sewing station where they may be closed by sewing, prior to final incorporation into the garment itself.

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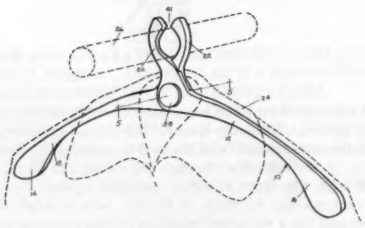
### 3,794,225
### HANGER

Craig E. Ashton, 2440 Tulip St., Philadelphia, Pa. 19125

Filed June 23, 1972, Ser. No. 265,708
Int. Cl. A41j *51/08*
U.S. Cl. 223—88 9 Claims



A garment hanger comprising a first L-shaped member and a second L-shaped member, said first and second members being provided at the respective corners thereof with pivot pin receiving openings. A split pivot pin locks within the openings, to pivotally join the first and second members together. The short legs of the first and second members arcuately curve to close upon and grip a hanger rod for garment hanging purposes. The weight of the garment pivots the first and second members about the pivot pin to urge the curved legs into tight engagement with the hanger rod. The split pin includes two cooperating members, each of which is provided with a cam surface and an interlocking surface whereby pressing the split pin sections together causes the members to interact along the respective cam surfaces thereof until the interlocking surfaces tightly engage to pivotally lock the first and second members together to form the garment hanger.

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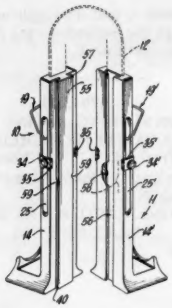
### 3,794,226
### SKI BOOT CARRIER

Robert Penniman, Jericho, Vt., assignor to Barreca Products Co., Subsidiary of Shelbourne Industries, Inc., Shelbourne, Vt.

Division of Ser. No. 91,350, Nov. 20, 1970, Pat. No. 3,721,373.
This application Aug. 23, 1972, Ser. No. 283,189
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 R 2 Claims



The invention contemplates a boot carrier suitable for ski boots, wherein each boot has its own separate bracket to which it is mounted and adjustably clamped. The brackets are interconnected by a flexible strap to permit the option of shoulder-slung portage. The brackets are also separately interconnectable to provide the further option of mutually braced standing support, for neat storage off the floor.

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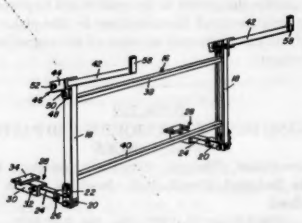
### 3,794,227
### BICYCLE CARRIER FOR VEHICLES

Stanley D. Stearns, 1641 Coral Gate Dr., Miami, Fla. 33145

Filed May 3, 1972, Ser. No. 250,014
Int. Cl. B60r *9/10*
U.S. Cl. 224—42.01 6 Claims



A pair of horizontally spaced uprights including mounting structure at their lower ends for securement from a vehicle end portion and including a pair of support arms having base ends thereof secured to the upper end portions of the uprights with the other ends of the support arms projecting outwardly

of the uprights in a direction generally normal to a line extending between the uprights. The base ends of the support arms are pivotally supported from the uprights for angular displacement about generally aligned horizontal axes and the support arms are swingable upwardly from outwardly projecting slightly upwardly inclined positions to positions swung at least somewhat past the vertical. In addition, a support base accessory is provided and includes structure for coaction with and support of the lower end portions of the uprights therefrom by means of the aforementioned mounting structure carried thereby.

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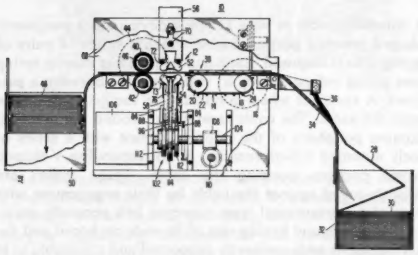
**3,794,228**
**BURSTING AND SEPARATING APPARATUS FOR CONTINUOUS FORMS**

**Richard H. Colwill, Victor; William E. Dewey, Pittsford; Hans Lochmann Vanbennekom, Rochester, and William H. Mowry, Jr., Ionia, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.**

**Filed Dec. 22, 1971, Ser. No. 210,737**
**Int. Cl. B26f** *3/02*; **B65h** *35/10*
**U.S. Cl. 225—93** **17 Claims**



Apparatus for automatically, continuously bursting and separating individual items at relatively high speed from a continuous series of items such, for example, as manifolded document forms. The invention employs one or more oppositely disposed, substantially rigid, yet deformable members disposed in confronting arrangement in the path of the items to be separated. The deformable members are movable into face contact with the items disposed therebetween so that the items are stretched tautly between the confronting deformable members causing the leading item to be burst apart and separated from the adjoining trailing items. Means adjacent to the deformable members and in the pathway of the items cause the burst item to be rapidly discharged out of the path of the advancing items and into a stacking pocket or hopper or onto a shingling table.

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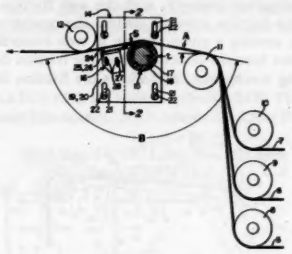
**3,794,229**
**SENSOR FOR DETECTING WIRES TRAPPED ON A CREEL**

**Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed Apr. 26, 1973, Ser. No. 354,722**
**Int. Cl. B65h** *25/22*
**U.S. Cl. 226—25** **17 Claims**

A mechanism for detecting when a wire, paying out from a spool mounted on a creel, becomes trapped on the creel. The mechanism responds to deactivate the means for paying out all of the wires from the creel, when a trapped wire becomes overly tensioned. The mechanism continually monitors all of



the wires while being sensitive to each of the wires should any one of them become trapped and tensioned beyond a certain desired tension.

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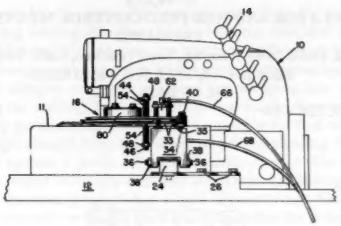
**3,794,230**
**WORK PIECE GUIDE SYSTEM**

**Carney J. Bryan, Greensboro, and James B. Fulp, Summerfield, both of N.C., assignors to Blue Bell, Inc., Greensboro, N.C.**

**Continuation of Ser. No. 221,109, Jan. 26, 1972, abandoned, which is a continuation of Ser. No. 877,364, Nov. 17, 1969, abandoned. This application Dec. 26, 1972, Ser. No. 318,623**
**Int. Cl. D05b** *35/10*
**U.S. Cl. 226—3** **10 Claims**



A system for accurately controlling and guiding the edge portions of one or more flexible fabric work pieces as they are being fed to a sewing machine stitching zone by applying a biasing or torque force to the work pieces. The torque is responsive to a linear force applied by the feed dogs and to frictional forces applied at pinch points spaced upstream and laterally of the feed dogs which linear force urges the edges of the work pieces into engagement with a guide member for maintaining a line of stitching a predetermined distance away from the edge of each work piece.

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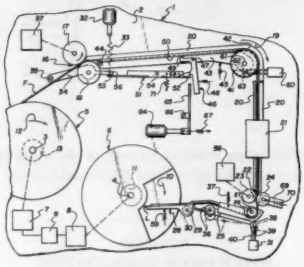
**3,794,231**
**WEB TENSION REGULATING APPARATUS**

**William A. Martin, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Apr. 5, 1973, Ser. No. 348,446**
**Int. Cl. B65h** *23/16*
**U.S. Cl. 226—36** **19 Claims**

A web handling apparatus is adapted to move web material in forward and reverse directions and under varying degrees of web tension. In such apparatus, a web friction drive is actuatable to assume an operative mode for feeding web material, therefrom, in the forward direction toward a web drawing mechanism and at a rate in excess of that at which the drawing

mechanism can draw the same material forward. The web friction drive normally assumes an idle mode in which the friction drive does not exert a web feeding affect on web material moving in the forward or reverse directions. A web tension sensing mechanism connects with the web friction drive, for actuating the friction drive to assume the operative mode in response to sensing a given tension in web material which is moving in the forward direction from the friction drive to the web drawing mechanism, and allows the friction drive to assume the idle mode after tension in the same material has eased or slackened. However, the web tension sensing mechanism and web friction drive remain disconnected as web material is moved in the reverse direction. In this way, the web tension sensing mechanism cannot actuate the web friction drive to assume the idle mode during movement of web material in the reverse direction.



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**3,794,232**

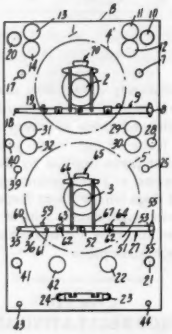
**COLLATOR AND WEB FEED CONTROL MEANS FOR THE SAME**

**Nello J. Petri, 2140 Jones St., San Francisco, Calif. 94133**

**Filed Jan. 19, 1972, Ser. No. 219,033**

**Int. Cl. B65h** *17/20*

**U.S. Cl. 226—50** **8 Claims**



A collator comprising a plurality of rotatably supported paper rolls the paper webs of which are gathered in superimposed layers to form a unitary business form or the like. Provision is made for discharging the webs to one or the other end of the collator to permit the webs of all rolls to be discharged in one direction, all rolls to be discharged in the opposite direction or one or more rolls to be discharged in different directions so as to permit employment of the collator on two different manifolds at the same time. Unique tensioning means is provided for controlling the feed of the web.

**3,794,233**

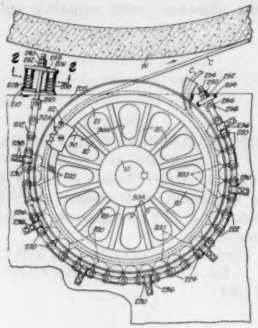
**MEANS AND TECHNIQUES USEFUL IN WIRE GRIPPING DEVICES**

**Maximiliaan J. Dykmans, 4434 Mayapan Dr., La Mesa, Calif. 92041**

**Filed Sept. 30, 1971, Ser. No. 185,327**

**Int. Cl. B65h** *17/22*

**U.S. Cl. 226—183** **7 Claims**



A rotatable cable or wire gripping device has a peripheral V-shaped grooved portion within which a series of pairs of gripping jaws is disposed. Each pair of jaws has its own spring means acting independently to wedge a cable between a pair of jaws. A sprocket wheel connected to the gripping device rotates the same. The cable is wrapped around the practical maximum periphery of the gripping device with a series of loosely mounted rollers retained in corresponding V-shaped grooved portions pressing the cable. These rollers are resiliently urged against the cable by their engagement with rollers of a conventional type conveyor belt generally encircling the device and having one of its ends anchored and the other one of its ends resiliently supported and adjustable to in turn adjust the force on the rollers and hence the cable gripping action.

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**3,794,234**

**DOUGH BATCHING MACHINE**

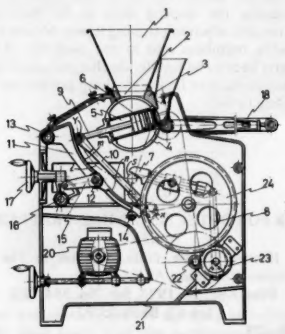
**Domingo Terren Pardo, Onteniente 7, Valencia, Spain**

**Filed Dec. 7, 1970, Ser. No. 95,711**

**Claims priority, application Spain, May 22, 1970, 379968**

**Int. Cl. G01f** *11/00, 13/00*

**U.S. Cl. 222—218** **5 Claims**



Means for batching bread dough wherein a vertical funnel has an outlet having a curved concave edge viewed in a

direction transverse to the outlet. The edge is prolonged at least unilaterally in an arch approximately as wide as the outlet. A rotating body is coaxially disposed to the arched edge of the funnel opening and has a cylindrical cavity transverse to the axis of the body with a piston operating therein. The rotating body has a cylindrical lateral surface capable of closing the outlet. The cavity vertically aligns with the outlet and is capable of directly receiving from the funnel a quantity of dough contained therein so that it may then, upon rotation of the rotating body, deliver an amount of the dough to a point of utilization.

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**3,794,235**

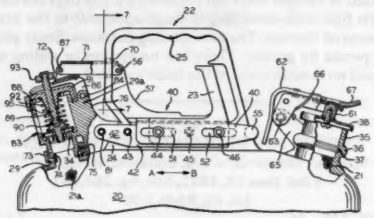
**PLASTIC SAFETY CONTAINER FOR INFLAMMABLES**

**Frank S. Flider, Chicago, Ill., assignor to The Justrite Manufacturing Company, Chicago, Ill.**

**Continuation-in-part of Ser. No. 97,713, Dec. 14, 1970, Pat. No. 3,727,807. This application Aug. 13, 1971, Ser. No. 171,537**

**Int. Cl. B65d** *47/08*

**U.S. Cl. 222—471** **8 Claims**



An all-plastic safety container has a hollow plastic wall with a continuously closed inner surface terminating at a pair of openings; one for venting and filling, and one for pouring. An integral, upstanding, thickened fin and handle combination formed on the outside surface of the container, facilitates the attachment of trigger controlled, safety cap linkage and hardware to the can, without breaking through the inner surface. Yet, the container and its handle are mechanically strong enough to withstand severe usage and to lift heavy weights.

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**3,794,236**

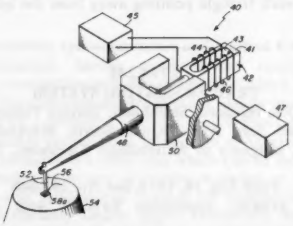
**MONITORING AND CONTROL MEANS FOR EVALUATING THE PERFORMANCE OF VIBRATORY-TYPE DEVICES**

**Thomas Salzer, Bedford, and Charles T. Martin, Jr., Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Continuation of Ser. No. 168,231, Aug. 2, 1971, abandoned. This application May 7, 1973, Ser. No. 358,215**

**Int. Cl. B23k** *5/20*

**U.S. Cl. 228—1** **7 Claims**



Apparatus and method for determining the operative effectiveness of a vibrating means coupled to a non-linear load, said apparatus comprising a vibrating means operatively connected to a source of vibratory energy and having coupling means for connecting to a non-linear load, vibration sensing means electrically connected to a harmonic analyzing means having an output electrically connected to an indicator means which may include a display means and a control means.

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**3,794,237**

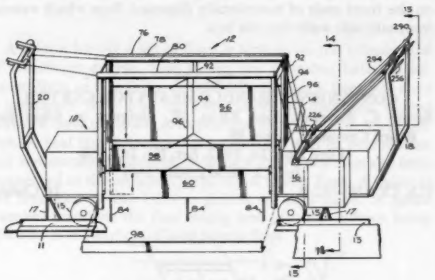
**APPARATUS FOR LAYING SHINGLES OR THE LIKE**

**Jesus Manuel Hernandez, 2733 Adams St., Long Beach, Calif. 90810**

**Filed Dec. 14, 1971, Ser. No. 207,828**

**Int. Cl. B27f** *7/02*

**U.S. Cl. 227—111** **15 Claims**



A power driven, manually controlled machine for applying and nailing roofing shingles and the like, the machine including guide means for steering the machine with respect to the row of shingles to be applied; a bin adapted for retaining a plurality of shingles vertically oriented for dropping into proper position for nailing; first and second vertically disposed and generally parallel blades selectively operable for first separating a single shingle from the bundle and then releasing it to fall forward against a guide for proper positioning; a third selectively operable vertically disposed blade member having a plurality of hammer projections; a tack separator and feeder assembly actuable with the third blade member for separating, conveying and positioning tacks with respect to a shingle for nailing by the hammer projections. Control is effected at either side of the machine by like sets of two pairs each of control levers operating cables in conjunction with a pulley assembly and drive shaft to effect the proper sequential operations.

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**ERRATUM**

For Class 228—1 see:
Patent No. 3,794,236

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**3,794,238**

**RECLOSABLE RECTANGULAR CARDBOARD BOX**

**Alwin Egli, Beringen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland**

**Filed Feb. 28, 1972, Ser. No. 229,854**

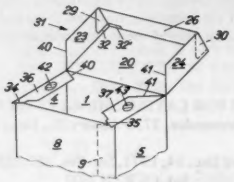
**Claims priority, application Switzerland, Mar. 1, 1971, 2950/71**

**Int. Cl. B65d** *5/66*

**U.S. Cl. 229—44 CB** **1 Claim**

A reclosable rectangular cardboard box is provided with a cover which is swingable about a folding line on the upper edge of the rear wall and has on its front edge a downwardly extending strip overlapping the outer upper margin of the

front wall when the cover is closed. Slot-shaped recesses are provided at the ends of the folding line between the cover and



said strip for yieldably receiving locking projections formed on the front ends of horizontally disposed flaps which extend from said side walls into the box.

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**3,794,239**

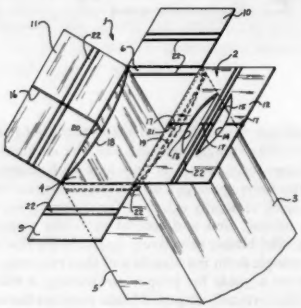
**CONVENIENCE HANDLE MEANS FOR CARTON**

**Bruno C. Bonczyk, East Alton, Ill., assignor to Alton Box Board Company, Alton, Ill.**

**Filed Apr. 24, 1972, Ser. No. 247,350**

**Int. Cl. B65d** *25/28, 5/46*

**U.S. Cl. 229—52 B** **16 Claims**



A handle is provided in the upper portion of a carton that incorporates features which facilitate the grasping of the handle means as when the carton is to be lifted and carried away. A series of score lines are arranged across the overlying flaps of the upper end closure of the carton, in addition to the disposition of prearranged score lines proximate the upper edges of select walls of the carton so that as one desires to grasp the aforesaid handle means, his fingers may slightly depress the underlying flap and bulge the carton walls to provide convenient clearance for further insertion of the hand and ease of grasping of said handle; and, reinforcing tape is provided at particular locations in this upper portion of the carton to strengthen it against tearing and for carrying as the foregoing manipulative procedures are being performed.

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**3,794,240**

**MAIL DELIVERY SIGNAL DEVICE**

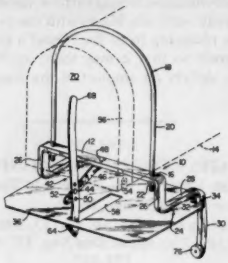
**Douglas T. Myers, 206 Jackson St., Macon, Mo. 63552**

**Filed June 8, 1972, Ser. No. 261,008**

**Int. Cl. B65d** *91/00*

**U.S. Cl. 232—35** **14 Claims**

A signal device for use with rural mail boxes comprises a laterally extending bracket having laterally spaced depending legs. A signal flag of any desired shape is mounted at or near its aft edge to pivotal mounting means for free swinging by gravity. A latch lever is pivotally mounted to the bracket and has a hook at its lower end to engage the forward portion of the flag and hold it in retracted position. The upper end of the lever is in the path of movement of the mail box door and is angularly displaced by opening of the door to release the flag for swinging down to signaling position. The bracket may be



mounted in various ways but preferably a bail overlies the box with its free ends extending through apertures in the bracket and secured thereto. The two moving parts are freely pivoted and operate by gravity. There are no springs or sliding members and no modification of the basic mail box.

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**3,794,241**

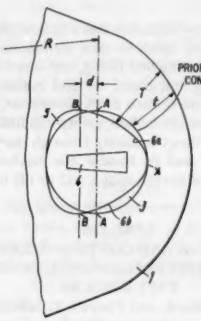
**ROTOR FOR HIGH SPEED CENTRIFUGES**

**Peter Szentesi, Beethoven u. 5/a, Budapest, Hungary**

**Filed June 19, 1972, Ser. No. 264,162**

**Int. Cl. B04b** *5/00*

**U.S. Cl. 233—26** **2 Claims**




In a high speed centrifuge having a rotor with bores for receiving sample containers, having triangular cross-sectional contour in a plane transverse to the axis of rotation, with slightly curved sides and rounded corners of the triangle; one corner of each triangle pointing away from the axis of rotation.

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**3,794,242**

**TRAILER HEATING SYSTEM**

**Manfred Otto Hagdorn, Stockholm; Torsten Palmeth, Sollentuna, and Jean Ivan Ragnar Boivie, Stockholm, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden**

**Filed Aug. 16, 1972, Ser. No. 281,048**

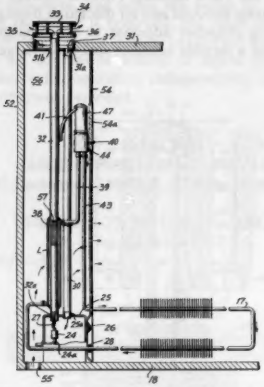
**Claims priority, application Sweden, Aug. 20, 1971, 10578/71**

**Int. Cl. F24d** *3/10*

**U.S. Cl. 237—59** **15 Claims**

A central heating system for the enclosed space of a vehicle trailer, or motor home having circulating liquid medium which

is heated in a boiler and heat transferred to radiators in an open system via an expansion vessel. The expansion vessel is situated at a high level and is so constructed that vapor in the



riser conduit of the system is condensed and substantially only liquid descends in the downward conduit from the expansion vessel; the heating of the enclosed space is controlled by a thermostat operatively connected to the system.

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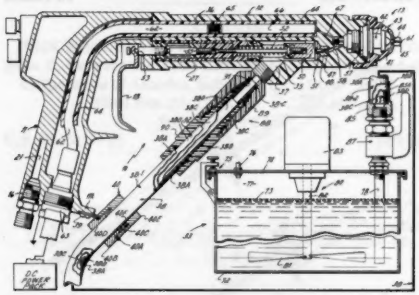
**3,794,243**

**ELECTROSTATIC SPRAY APPARATUS AND METHOD**

**Simon Z. Tamny, Lorain; Donald R. Hastings, Elyria, and Frederick R. Wilhelm, Avon Lake, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio**

**Filed Apr. 26, 1972, Ser. No. 247,730**
**Int. Cl. B05b** *5/00*
**U.S. Cl. 239—3** **10 Claims**



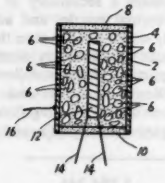
An electrostatic spray apparatus and method for spraying coating materials having conductivities ranging from moderately conductive to highly conductive, which is characterized by freedom from electrical shock and ignition hazards occasioned by a grounded operator inadvertently contacting the hose and/or grounding it during use in an explosive atmosphere. Included is a spray gun which can be moved relative to a stationary source of coating material, an improved shock-free and ignition-free conduit for transporting under pressure moderately and/or highly electrically conductive coating materials from the stationary supply to the movable gun, and a source of high voltage unidirectional current for electrostatically charging the coating material prior to deposition thereof onto the article being coated.

**3,794,244**

**SEAL CENTERING AND RETENTION MEANS**

**Connie W. McMath, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.**

**Filed Dec. 20, 1971, Ser. No. 210,017**
**Int. Cl. B64c** *15/06*
**U.S. Cl. 239—265.41** **5 Claims**



A nozzle having a set of flaps is formed on the exhaust end of a turbojet engine. Seal means are provided between adjacent flaps so that the area between the nozzle flaps will have a minimum flow loss between them as they are moved between their minimum area position and maximum area position. A seal flap is located between each pair of nozzle flaps and is maintained centered by a track on the seal flap and links connected to the adjacent sides of the nozzle flaps. A guide at the free end of the links is guided on said track. A guide member positions the flap axially and prevents it from being lifted from the surface of said nozzle flaps.

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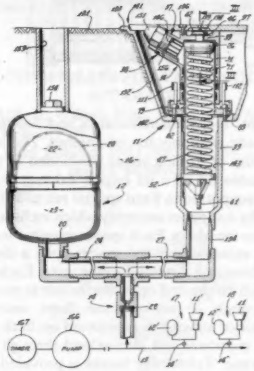
**3,794,245**

**INTERMITTENT SPRINKLER AND SYSTEM**

**John D. Wilson, Balboa, Calif., assignor to Williamson-Built, Inc., Santa Fe Springs, Calif.**

**Filed May 26, 1972, Ser. No. 257,741**
**Int. Cl. B05b** *3/00, 15/10*
**U.S. Cl. 239—206** **18 Claims**



A system of pressure actuated intermittent discharge sprinkler units, in which each unit is adapted to be installed below grade level and includes an accumulator for connection to a source of water for accumulating water under increasing pressure, a pressure actuated sprinkler head connected to the accumulator and having a normally closed valve means carried by a nozzle assembly, such that the valve means responds to increasing water pressure in the accumulator and intermittently opens raising the nozzle assembly above grade level to discharge water therefrom, and a self-adjusting flow control valve connecting the accumulator to a source of water such that the periodic build-up and release of pressure in each unit

accumulator does not adversely influence the operation of the remaining sprinkler units connected to the same water source. The nozzle assembly which is formed with a radially directional nozzle includes a ratchet indexing means for cyclically and incrementally rotating the nozzle assembly each time it is raised and subsequently lowered by the periodically changing water pressure in the accumulator. The nozzle assembly desirably includes a secondary or auxiliary nozzle, spaced below the principal nozzle, and adapted to deliver water to a substantially smaller radius than the effective radius of the principal nozzle. The auxiliary nozzle also serves to discharge the upper portion of water collecting in a bowl or skirt which houses the valve means and nozzle assembly, thereby preventing such water from overflowing the bowl and creating a muddy ring immediately adjacent to the bowl.

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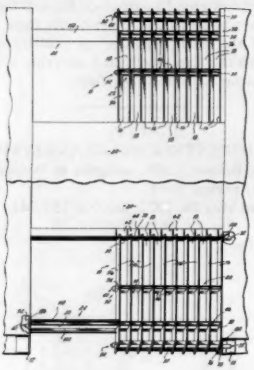
**3,794,246**

## THRUST REVERSING CASCADE ASSEMBLY

**Carl A. Weise, San Pedro, Calif., assignor to Aeronca, Inc., Middletown, Ohio**

**Filed Apr. 11, 1973, Ser. No. 350,088**
**Int. Cl. F02k** *1/20*; **B64c** *15/06*
**U.S. Cl. 239—265.33** **7 Claims**



A lightweight, easily manufactured and assembled thrust reversing cascade assembly for jet engines. The assembly includes a plurality of turning vanes positioned in spaced relation and locatable aft of a jet engine exhaust. Each turning vane is rigidly supported in fixed spacial relation to other such turning vanes by a support assembly which includes a plurality of planar spacer members. Each spacer member includes a tab portion which extends from the spacer body a distance sufficient to pass through a slot in a turning vane. Each spacer also includes a notch on the end opposite the tab to receive the tab projecting through a turning vane from another spacer member. A pair of straps are positioned on both sides of the planar spacer members and also extend through the slots in each turning vane. Tensioning means is provided at opposite ends of the straps to place the straps in tension while providing compression forces on the spacers and turning vanes to rigidly support the turning vanes in spaced relation.

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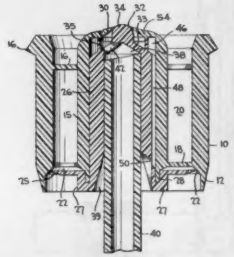
**3,794,247**

## SPRAY FITMENT FOR SQUEEZE BOTTLES

**Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045**

**Filed Nov. 22, 1972, Ser. No. 308,648**
**Int. Cl. B67d** *5/58*
**U.S. Cl. 239—327** **13 Claims**

A spray fitment for squeeze bottles including a generally cylindrical plug for sealing reception in the neck opening of a conventional, flexibly resilient squeeze bottle. The plug has an axial opening therethrough, in which is supported a dispensing valve housing, between which and the inner wall of said opening is defined an axial air inlet port controlled by an air inlet valve carried by the valve housing. Formed through the valve housing are separate product and air discharge passages opening into a mixing chamber adjacent to a discharge orifice. There is provided a flexible resilient spray discharge valve in



the form of a diaphragm which automatically closes the orifice at the conclusion of each squeeze or discharge stroke to prevent back-flow of air into the container. When thus closed, the spray discharge valve isolates the air discharge passage from the product discharge passage, to thereby prevent backflow of product and thus to maintain the product passage constantly primed in readiness for ejecting a full charge of product on each squeeze stroke, while preventing clogging of the air discharge passage by the product.

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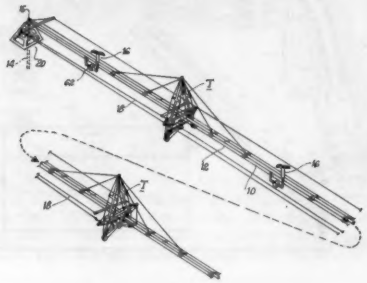
**3,794,248**

## VALVE CONSTRUCTION FOR IRRIGATION SYSTEMS

**Roger M. Sherman, Los Gatos, Calif., assignor to Lockwood Corporation, Gering, Nebr.**

**Filed Apr. 23, 1973, Ser. No. 353,589**
**Int. Cl. B05b** *1/30*
**U.S. Cl. 239—533** **10 Claims**



A valve construction for use in irrigation systems or other systems wherein liquid is moved through lines from one position to another. The valve is particularly utilized in a system wherein spray heads are connected to the lines with the liquid being passed through the spray heads for distribution over a relatively large area. The construction includes a valve seat located in a passage used for delivering liquid to a spray head. A valve for engaging the seat and for cutting off the flow of liquid through the passage is employed. The construction defines a cavity reciprocally receiving the valve and resilient means supported in the cavity normally urge the valve toward the valve seat. The pressure developed by the liquid source of

the system will unseat the valve under normal conditions, and due to the back pressure developed because of the restriction provided by the spray head, the valve will remain in this condition during operation. The cavity receiving the valve is vented to the atmosphere, and when the pump or other means for supplying the liquid is removed, the valve will automatically close. The vent passage may be connected to a conduit which provides an alternative source of liquid pressure for controlling the valve operation independently of the automatic control otherwise provided.

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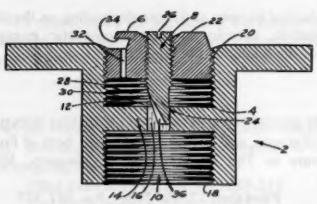
**3,794,249**

**ADJUSTABLE SPRINKLER VALVE**

**George H. Lockwood, 2125 N.E. 27th Dr., Wilton Manors, Fla. 33305**

**Filed Sept. 27, 1971, Ser. No. 184,306**
**Int. Cl. B05b** *1/32*
**U.S. Cl. 239—539** **1 Claim**




A sprinkler head including an adjustable valve with a valve opening and a movable valve means. The valve means includes a gate means movable into and out of the valve opening. The gate means and valve opening form a valve port to control fluid flow at relatively low fluid flow rates. The valve port includes a port perimeter and cross sectional port area in a plane lying generally perpendicular to the flow of fluid. The valve port is varied in size while maintaining a continuous port perimeter with a generally wide cross sectional port area.

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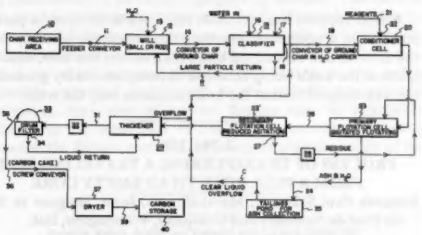
**3,794,250**

**PROCESS AND SYSTEM FOR RECOVERING CARBON**

**John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah**

**Filed Feb. 23, 1973, Ser. No. 335,009**
**Int. Cl. B02c** *21/00*
**U.S. Cl. 241—21** **14 Claims**




A process and system for the reduction (by milling), separation and recovery of carbon contained in char, coke and other residues resulting from distillation or destructive distillation of carbon-containing materials. The process or system includes ball or rod mill means for pulverizing incoming carbonaceous materials such as char, routing the output of the mill to a classifier so as to provide for a large particle return, conveying the output of the classifier to a flotation system wherein appropriate reagents are added to effect froth recovery, and finally, thickening the result of the material and otherwise processing it so that a carbon cake may be derived, dried, and deposited for carbon storage. Resultant carbon is thus produced in essentially a pure form, rivaling that derived through current mining processes.

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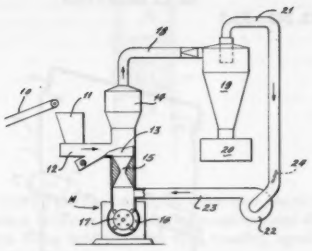
**3,794,251**

**MATERIAL REDUCING SYSTEM AND APPARATUS**

**Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.**

**Filed May 8, 1972, Ser. No. 251,182**
**Int. Cl. B02c** *11/08;* **B07b** *9/00;* **B07c** *7/01*
**U.S. Cl. 241—65** **11 Claims**




A material reducing system having apparatus in which a venturi is inserted in the air circulating means at a point or place to control the size or weight characteristics of material which is allowed to enter a reducing mill which reduces the material and returns it through the venturi to the circulating means. The system includes supporting components to enable operation with heat for drying moisture containing material, for separating the fines from the circulating air, and for supplying fines as a source of fuel to produce the drying heat.

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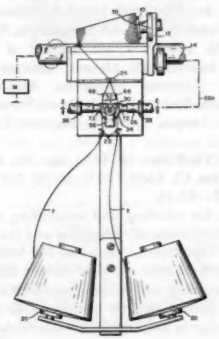
**3,794,252**

**DETECTING MEANS FOR YARN PROCESSING APPARATUS**

**Samuel L. Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.**

**Filed June 25, 1971, Ser. No. 156,716**
**Int. Cl. B65h** *63/02*
**U.S. Cl. 242—38** **17 Claims**



Apparatus for processing yarn comprising a disc and roller supported at opposite sides of the plane of a pair of running

yarns for frictional engagement with the yarns, with the roller rotating in a direction opposite to the direction of movement of the yarns and with the disc free to turn about an axis at its center perpendicular to the plane of the yarns and midway between the yarns so that the disc is adapted to be maintained in a condition of balanced equilibrium by uninterrupted movement of the yarns between the surfaces of the disc and the roller, and to stop the apparatus in the event that it becomes unbalanced.

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**3,794,253**

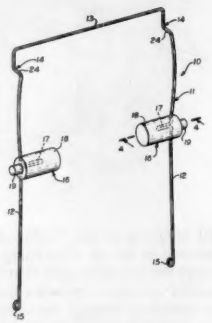
## COMBINED TISSUE BOX AND TOILET PAPER ROLL HOLDER

**Sanford B. Megdall, 70-20 108th St., Forrest Hills, N.Y. 11375**

**Continuation-in-part of Ser. No. 251,314, May 8, 1972, abandoned. This application June 1, 1973, Ser. No. 366,310**

**Int. Cl. B65h** *19/00*

**U.S. Cl. 242—55.2** **5 Claims**



A holder equipped to support a roll of toilet paper and to receive a box of tissues in spaced above relation to the toilet paper roll to allow dispensing of tissues from the box without interfering with dispensing of toilet paper.

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**3,794,254**

## DEVICE FOR WINDING AND UNWINDING A TAPE CARRIER

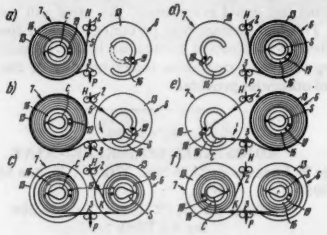
**Leonid Grigorievich Tarasenko, Festivalnaya ulitsa, 22, korpus 3, kv. 442; Abram Yakovlevich Kuperman, ulitsa Priorova, 14a, kv. 72; Felix Pavlovich Noskov, ulitsa Chkalova, 41/2, kv. 80; Irina Sergeevna Derevyagina, ulitsa Dybenko, 30, korpus 5, kv. 395; Boris Lvovich Malkus, ulitsa Dvintsev, 4, kv. 42; Naum Davydovich Bernshtein, Novo-Khoroshevskoe shosse, 35, korpus 1, kv. 10, all of Moscow, U.S.S.R.; Anatoly Anatolievich Alexeev, deceased, late of Moscow, U.S.S.R.; Tatyana Vasilievna Alexeeva, and Anatoly Nikolaevich Vishnyakov, both of Novocheremushkinskaya ulitsa, 3a, korpus 2, kv. 71, Moscow, U.S.S.R. (administrators)**

**Filed Nov. 10, 1971, Ser. No. 197,310**

**Int. Cl. B65h** *17/06, 65/00;* **G03b** *21/32*

**U.S. Cl. 242—55.16** **5 Claims**

A device for winding and unwinding a tape carrier is intended for automatically engaging and releasing the leader, or loop of the tape carrier, and also for winding and unwinding the same, and, in case the tape carrier forms an endless loop, for bifilar winding and unwinding, with automatic rewinding of the tape carrier directly in the course of information reading. The device is used in cases when various information tape carriers, such as film copies, magnetic films and punched paper tape, are required to be conveyed through the readout unit, making specific steps such as fixing the tape carrier in the reel core and rewinding the tape carrier unnecessary. The device comprises a tape-moving means, a drive means and two reels having cores and rims, the core of at least one of the reels



being adapted to open and close depending on the direction of reel rotation, thereby ensuring automatic engagement or release of the leader or the tape carrier loop.

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**3,794,255**

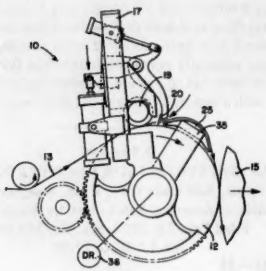
## WEB CUTTER FOR SINGLE DRUM WINDER

**Paul E. Harmon, and Richard W. Phelps, both of Fulton, N.Y., assignors to The Black Clawson Company, Middletwon, Ohio**

**Filed Oct. 27, 1972, Ser. No. 301,327**

**Int. Cl. B65h** *19/26*

**U.S. Cl. 242—56 R** **4 Claims**



A web support moves about the drive drum from a parked position to a position supporting the web material away from the drive drum. A toothed knife then severs the web, with the teeth of the knife being received in complementary grooves in the web support so that the knife contacts only the web.

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**3,794,256**

## PROCESS OF TRANSFERRING A TRAVELING WEB FROM A PULL ROLL TO AN EMPTY CORE

**Kenneth Paul Schwarz, Marshalltown, Iowa, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

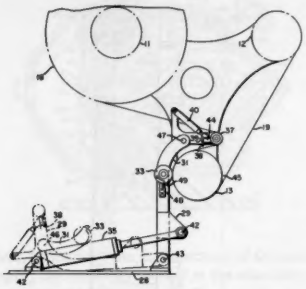
**Filed Nov. 17, 1971, Ser. No. 199,662**

**Int. Cl. B65h** *19/26*

**U.S. Cl. 242—56 A** **4 Claims**

In a process for continuously winding a web onto a core, the steps of transferring the web from a full roll to an empty core while significantly minimizing stub roll waste by advancing an empty positively driven core into the path of the traveling web so that the web partially wraps the empty core; deflecting the web to substantially increase the web wrap around the empty core; removing the driving torque from the empty core per-

mitting the empty core to idle; severing the web near the surface of the empty core establishing a leading edge on the



traveling web that follows the surface of the empty core as it idly rotates; and thereafter applying torque to positively drive the empty core forming a new roll.

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**3,794,257**

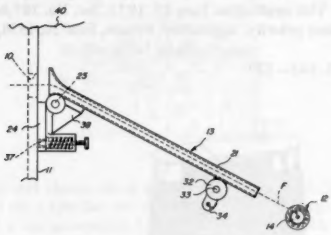
**WINDING DEVICE FOR A THIN FLEXIBLE MATERIAL**

**George M. Reitter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed June 5, 1972, Ser. No. 259,519**

**Int. Cl. B65h** *75/00, 27/00*

**U.S. Cl. 242—67.1 R** **12 Claims**



A winding device for a strip of thin, flexible material comprises guide means adjustable to the width of the material and a reel whose width can be altered to accommodate the material being wound. The guide means comprises a fixed edge guiding member and a movable edge guiding member. The latter is mounted for movement relative to the fixed member either by the edges of the material per se, or manually in accordance with the width of the material to be wound. A spindle is provided on which a core having a fixed flange at one end is slideably mounted and keyed to the spindle for rotation therewith. Any one of several flanges can be releasably secured to the other end of the core to provide a distance between the flanges that is in accordance with the width of the material.

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**3,794,258**

**REEL FOR USE WITH FLEXIBLE STRIPS**

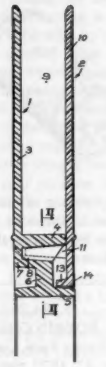
**Pierre Ludovic Andre Posso, deceased, late of Lausanne, Switzerland, and Patrick Pierre Posso, 10 Avenue Jurigoz, Lausanne, Switzerland**

**Filed July 25, 1972, Ser. No. 275,055**

**Int. Cl. B65h** *75/18*

**U.S. Cl. 242—71.8** **7 Claims**

A reel for use with flexible strips, for example magnetic tape, assembled from two separate parts, one of the parts, which is made from a glass fiber reinforced plastics material, comprising a side piece from which a core, including a central boss, a wind-on sleeve and a tie piece, extends transversely and the other part, which is made from a transparent plastics material, having transverse projecting members which



cooperate with the core to center the other part, there being a small clearance between the centering members and the core and the parts being held together by a bonding agent which remains pliable after polymerization.

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**3,794,259**

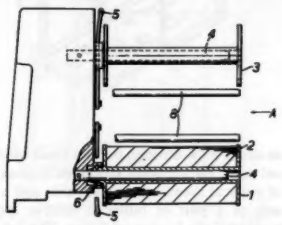
**SPOOL LOADING DEVICES**

**Ralph Edward Huckle, Southbourne, near Emsworth, England, assignor to English Numbering Machines Limited, London, England**

**Filed Oct. 21, 1971, Ser. No. 191,439**

**Int. Cl. G03b** *1/04*

**U.S. Cl. 242—71.2** **4 Claims**



A spool loading device comprises a container which holds a pair of spools and a linking ribbon in positions corresponding to those in which they are used in a utilising machine, thus enabling the spools and ribbon to be loaded without damage to the ribbon.

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**3,794,260**

**TEXTILE CORE WITH A BREAKAWAY STRINGUP SLOT**

**Lyles Howard Sowell, Madison, Tenn., assignor to E.I. du Pont de Nemous and Company, Wilmington, Del.**

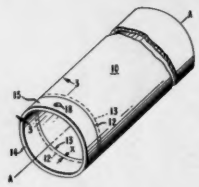
**Filed Oct. 16, 1972, Ser. No. 297,806**

**Int. Cl. B65h** *75/28*

**U.S. Cl. 242—125.1** **5 Claims**

A laminated textile yarn core with a breakaway stringup slot features a circumferentially disposed groove in the outer surface of the core for initiating stringup and a second circum-

ferentially disposed groove on the inside that is longitudinally inward from the stringup groove. The two grooves have overlapping depths to cut one common bond line between layers of



the core. The incorporation of the second groove permits removal of the section of the core between the stringup slot and the end of the core by shearing the ply bond layer between the stringup slot and inner groove.

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**3,794,261**

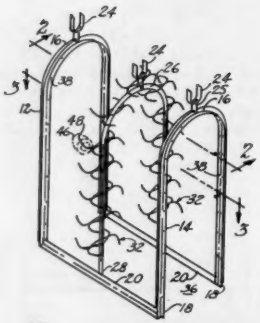
**BOBBIN CREEL**

**Aud J. Franks, Rt. 1, Rocky Face, Ga. 30740**

**Filed Apr. 17, 1972, Ser. No. 244,835**

**Int. Cl. B65h** *49/02*; **D02h** *1/00*; **D03j** *5/08*

**U.S. Cl. 242—131** **13 Claims**



A walk-in and a walk-through bobbin creel which comprises bobbin creel units each having U-shaped frames providing a structrue of vertical members on each side and each member supports sets of a pair of bullhorn bobbin spool supports completely around the U-shaped frame. The take-off for the ends of the yarns is toward one respective end or the other on each side and thence to a plurality of plastic tubes contained in a bundle across the top of the frame.

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**3,794,262**

**INGOT MOLD AND HOT TOP THEREFOR**

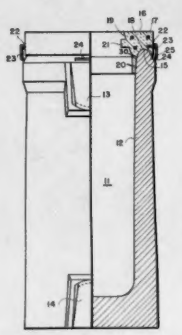
**John Nadrich, 9756 South Ave., Ext., Youngstown, Ohio 44514, and John A. Ericson, 732 Market St., Youngstown, Ohio 44502**

**Continuation of Ser. No. 28,044, April 13, 1970, which is a continuation-in-part of Ser. No. 704,459, Feb. 9, 1968, abandoned. This application Sept. 20, 1971, Ser. No. 182,207**

**Int. Cl. B22d** *7/10*

**U.S. Cl. 249—106** **4 Claims**

A combined ingot mold and hot top for use in the casting of ingots from molten steel. The top surface of the mold is provided with an upwardly projecting, rounded ridge immediately adjacent to the cavity walls. The hot top is composed of a single piece of reinforced insulating matrial and has a concave



groove on its lower surface which mates with the projecting ridge of the mold. Various means are provide to clamp the hot top to the mold to prevent the same from floating.

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**3,794,263**

**SUPPORT ARRANGEMENT FOR A HANK OF THREAD, AND HANKS EQUIPPED WITH SAID SUPPORT**

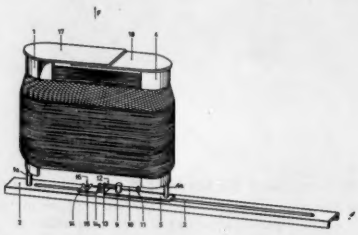
**Dominique Michel Delerue, 189, bld Descat, Tourcoing, France**

**Continuation of Ser. No. 108,454, Jan. 21, 1971, abandoned. This application June 29, 1972, Ser. No. 267,681**

**Claims priority, application France, Feb. 20, 1970, 70.06210**

**Int. Cl. B65h** *54/56, 49/30*

**U.S. Cl. 242—127** **8 Claims**



The invention relates to a support arrangement for a hank of thread and to hanks fitted with this support arrangement, which ensures correct unwinding and is made up basically of a fixed arm and a movable arm on which the coiled thread is arranged, the mobile arm co-operating with a spring and adjustable stop so as to maintain the coiled thread under tension.

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**3,794,264**

**CLOSED FACE SPINNING REEL**

**R. Dell Hull, 6101 E. Apache St., Tulsa, Okla. 74101**

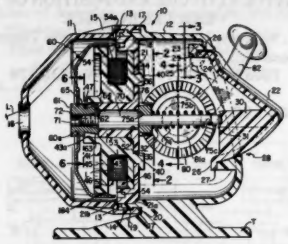
**Filed Jan. 19, 1972, Ser. No. 219,038**

**Int. Cl. A01k** *89/00*

**U.S. Cl. 242—84.2 R** **6 Claims**

The disclosure herein relates to fishing reels, especially so-called closed face spinning reels, and it is directed more specifically to certain structural arrangements in closed face spinning reels, including a new pickup head casting lock; a new bayonet-type line spool mount, a simplified housing structure; a simplified anti-reverse mechanism; and a simplified drag brake mechanism. These new structural arrangements

for spinning reels tend to improve the operation thereof, to accommodate the use of inexpensive new plastic materials of



construction, to simplify the manufacture of the components, and to simplify the assembly thereof in the mass production of closed face spinning reels.

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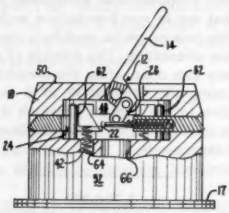
**3,794,265**
**REEL CLAMP**
**Johannes K. Jantzen, Mountain View, Calif., assignor to International Video Corporation, Sunnyvale, Calif.**
**Filed Oct. 24, 1972, Ser. No. 299,817**
**Int. Cl. B65h** *17/02*
**U.S. Cl. 242—68.3** **7 Claims**



A tape reel clamp which securely and accurately holds a tape reel on a spindle, the reel clamp having a finger lever linked to a wedge member which is slidably engagable with a pair of retractable fingers. The fingers are extendable over a tape reel hub mounted on the spindle, the pressure exerted on the hub being determined by a spring bias, the spring bias being opposed by said lever when retracting said fingers.

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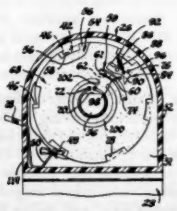
**3,794,266**
**BELT STORAGE APPARATUS**
**Saul Schwartz, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.**
**Filed Apr. 6, 1972, Ser. No. 241,700**
**Int. Cl. A62b** *35/00*; **B65h** *63/04*
**U.S. Cl. 242—107.4** **4 Claims**



Belt storage apparatus of the automatic locking type including a belt storage reel disposed on a frame for rotation in a belt extending direction and a belt retracting direction, a ratchet disc rotatable with the reel and including a plurality of circumferentially spaced ratchet teeth, a pawl lever engageable on the teeth to prevent rotation in the belt extending direction, a control plate rotatable as a unit with the reel and having a latch member pivotally supported thereon, a shutter disc equal in diameter to the ratchet disc and freely rotatable on the frame, the shutter disc having a plurality of circumferential surface elements separated by recesses, a lost motion connection between the control plate and the shutter disc limiting angular relative movement therebetween to one position wherein the surface elements bridge the ratchet teeth to close the latter to the pawl lever and another position wherein the recesses expose the ratchet teeth for engagement on the pawl lever, friction generating means retarding rotation of the shutter disc so that the latter always tends to assume the one relative position during reel rotation in the belt retracting direction and the other relative position during reel rotation in the belt extending direction, and a latch actuator disposed on the control plate for transverse bodily shiftable movement in response to reel rotation. As the belt approaches a fully retracted condition the latch actuator engages the latch member and biases the latter toward a latched position engaging a keeper on the shutter disc so that upon subsequent reel rotation in the belt extending direction the shutter disc is blocked out of the other relative position. When the belt is extended to an in-use condition the latch actuator separates from the latch member so that subsequent momentary belt retraction releases the latch member to thereafter permit movement of the shutter disc to the other relative position thereof.

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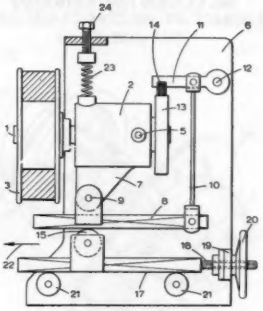
**3,794,267**
**APPARATUS FOR CONTROLLING THE TENSION OF YARN, WIRE, CORD OR THE LIKE**
**William Harry Kimpton, Prestbury, England, assignor to W.H.K. Products Limited, Cheshire, England**
**Filed Sept. 11, 1972, Ser. No. 287,756**
**Int. Cl. B65h** *59/04*
**U.S. Cl. 242—156.2** **4 Claims**

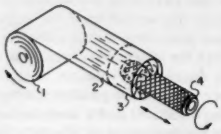


An apparatus for controlling the tension of yarn, wire, cord or similar elongate material being withdrawn from or taken up on to a package. A spindle is mounted for rotation about its longitudinal axis and is also rotatable about a pivot at right angles to the longitudinal axis of the spindle in dependence on the weight of the package. Brake means are operable to apply a braking force to the spindle and a lever is movable in accordance with movement of the spindle about its pivot to control the braking force. A fulcrum bears on the lever. The position of the fulcrum is adjustable lengthwise of the lever. Means are provided for applying an adjustable pressure loading on the spindle to bias movement of the spindle about its pivot.

## 3,794,268
## TUBULAR FILMS OR WEBS

Frank M. McNeill, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 102,458, Dec. 29, 1970, Pat. No. 3,709,703. This application Jan. 28, 1972, Ser. No. 221,558
Int. Cl. B65h 17/02
U.S. Cl. 242—55 12 Claims

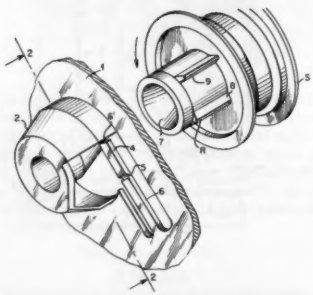


Flexible tubular material such as tubular films, foils, or webs are inflated or otherwise held in an expanded condition and wound radially inward on a supporting core. The resulting radially wound flexible tubular material is a novel product. The tubular material may be pulled off or fed from either end of the radially wound material and may be continuously filled by introduction of any desired material through the hollow supporting core or through the radially wound material itself in the event that the core has been removed.

## 3,794,269
## FILM CARTRIDGE

James E. Hoover, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,618
Int. Cl. G03b 1/04; G11b 15/32
U.S. Cl. 242—194 5 Claims

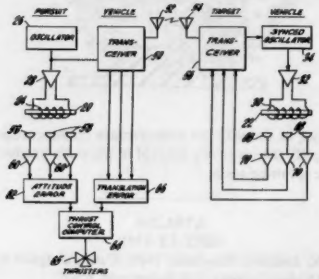


A super 8 mm film cartridge having a body and spool in which a finger member is integral with the body, and co-acts with the spool. A point of weakening on the finger in the form of a "V" shaped-notch responds to torsional force on such spool and rotation takes place in a direction opposite to normal film movement. Thereafter, bending of the finger at the point of weakening occurs. The bent portion on the finger is positioned away from the movement of the film as it is withdrawn from the cartridge.

## 3,794,270
## METHOD AND APPARATUS FOR DETERMINING THE RELATIVE ATTITUDE AND POSITION OF TWO VEHICLES IN SPACE

Richard W. Wilkens, Largo, Fla., assignor to Electronic Communications Inc., St. Petersburg, Fla.

Filed Mar. 21, 1972, Ser. No. 236,679
Int. Cl. B64g 1/00
U.S. Cl. 244—1 SD 6 Claims

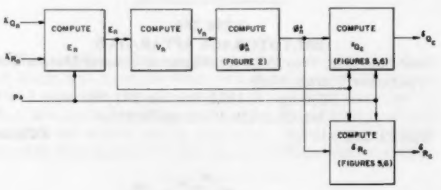



A magnetic member is located in each of two vehicles. At least one of these members and preferably both are pivotally movable in two perpendicular directions. Alternating magnetic fields that are in synchronization with each other are produced in the two magnetic members causing them to assume a colinear orientation. The attitude of a vehicle relative to an imaginary axis connecting the members can be determined by sensing the orientation of a movable magnetic member relative to the vehicle in which it is located. This system can be used to, for example, facilitate the docking of two vehicles in space.

## 3,794,271
## SELF-ORGANIZING CONTROL SYSTEM

Roger L. Barron, and Dixon Cleveland, both of Annandale, Va., assignors to Adaptronics, Inc., McLean, Va.

Filed Jan. 31, 1972, Ser. No. 222,072
Int. Cl. F41q 7/00
U.S. Cl. 244—3.15 15 Claims



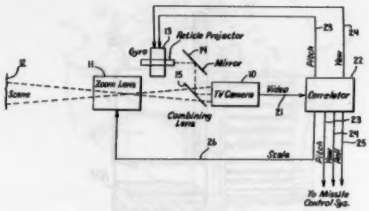

This disclosure relates to improvements in self-organizing control logic configurations having particular application to automatically or remotely piloted vehicles. The improvements include the use of multiple-point (time-distributed) functions for control system performance assessment, the use of performance assessment value-signal magnitude information to govern parameter step sizes, and means for controlling an object that is rotating with a determinable angular rate but unknown phase angle relative to a fiducial angular position of the object.

3,794,272

## ELECTRO-OPTICAL GUIDANCE SYSTEM

Klaus J. Hecker, Oberursel, Taunus, Germany, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 13, 1967, Ser. No. 616,437
Int. Cl. F41g 7/00; F42b 15/02
U.S. Cl. 244—3.17 7 Claims




The description involves area correlation of a scene viewed by a television (TV) camera carried by a missile toward a target seen preferably in the center of the scene. The initial scene is memorized in an electronic memory circuit of the correlator and digitally correlated with actual video signals viewed by the TV camera in the travel of the missile toward its target, this correlation providing pitch, yaw, roll, and zoom lens scale error signals to correct the missile direction and to correct the zoom lens focus as the target is approached. A reticle is projected onto the camera screen to provide reticle pulses for digital correlation as to scene segments.

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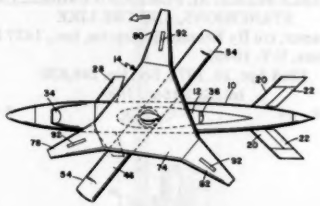
3,794,273

## VTOL ROTOR WING DRONE AIRCRAFT

Peter F. Girard, La Mesa, Calif., assignor to Teledyne Ryan Aeronautical, a division of Teledyne Industries, Inc., San Diego, Calif.

Filed Sept. 25, 1972, Ser. No. 291,582
Int. Cl. B64c 27/24
U.S. Cl. 244—7 A 8 Claims



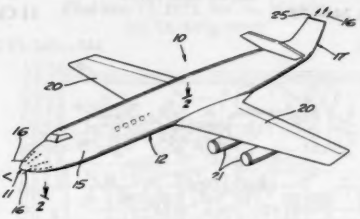
An aircraft capable of vertical take-off and landing and high speed cruising flight, utilizing a combine rotary and fixed wing. The wing has a large center body with three radial arms which are pivotal and controllable in the manner of helicopter rotor blades in the wing rotating operation, and incorporate spoilers to minimize center of pressure shift during transition between rotary and fixed modes. In fixed position the wing is stopped with one arm forward in a modified delta configuration, the lateral arms being movable for roll control in cruising flight. Propulsion is by means of a turbojet providing cruising thrust and also wing rotating thrust through tip nozzles in a beam mounted below the wing. In stopped position, the beam is streamlined in alignment with the forward arm, and for rotary wing mode the beam is rotationally displaced relative to the wing to clear the movable arm.

3,794,274

## AIRCRAFT STRUCTURE TO REDUCE SONIC BOOM INTENSITY

Oscar Eknes, 7850 Sunset Blvd., Los Angeles, Calif. 90046

Filed Dec. 19, 1969, Ser. No. 886,579
Int. Cl. B64c 21/02
U.S. Cl. 244—130 6 Claims



The structure of a fuselage of an aircraft having a plurality of apertures therein which permit high pressure air to be received within the confines of the exterior portion of said fuselage, and means within said fuselage adapted to direct and control the flow of said air until the energy thereof has been substantially reduced or same is emitted through carefully situated ports. The effective cross-sectional area of the nose portion of said fuselage is thereby substantially reduced so as to cause a similar reduction of the drag upon said aircraft.

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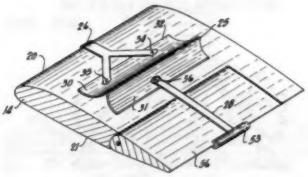
3,794,275

## DETACHABLE LIFT SPOILER FOR STATIONARY AIRCRAFT

Sheldon M. Satter, 1555 N. Crescent Dr., Cedarburg, Wis. 53012

Filed May 12, 1972, Ser. No. 252,908
Int. Cl. B64c 3/58
U.S. Cl. 244—41 10 Claims



A detachable lift spoiler for placement on the upper surface of the wing of a parked or tied-down aircraft to inhibit or prevent lift forces from being generated by the aircraft wing as wind blows therearound is generally prismatic in form and is secured on its forward side by a removable forward attachment member which is bendable to fit and grip the leading edge of the wing and is secured on its rearward side by a removable rearward attachment member which grips the trailing edge of the wing. One or more lift spoilers are used on each wing.

3,794,276

## ELECTRO-HYDRAULIC ACTUATING SYSTEMS FOR AIRCRAFT CONTROL SURFACES

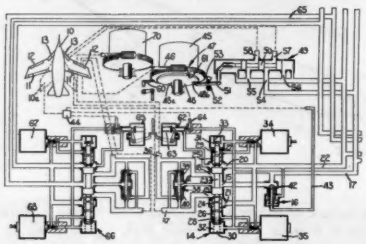
Peter John Maltby, Codsall; Alan Malpass, Dudley, and Kenneth Harold Ellis, Shareshill, all of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Oct. 4, 1972, Ser. No. 294,785

Claims priority, application Great Britain, Oct. 7, 1971, 46626/71

Int. Cl. B64c 13/36

U.S. Cl. 244—78 11 Claims



An electro-hydraulic actuator arrangement for control surfaces on aircraft wings comprises a hydraulic servo system responsive to first and second electrical signals to move the control surfaces in respective opposite directions, a position-respective means which provides third electrical signals to selected inputs of a pair of comparator circuits, and means for selecting required positions for the control surfaces. The position selecting means provides fourth electrical signals to other inputs of the comparator circuits, and the first and second electrical signals are provided at the outputs of the respective comparator circuits.

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3,794,277

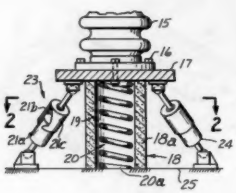
## EARTHQUAKE RESISTANT SUPPORT

Paul A. Smedley, 3780 Canfield Rd., Pasadena, Calif. 91107, and Anderson B. Smedley, 834 Linda Vista Ave., Pasadena, Calif. 91103

Filed Aug. 14, 1972, Ser. No. 280,129

Int. Cl. F16f 15/00

U.S. Cl. 248—20 17 Claims



An earthquake resistant support structure which comprises two types of supporting members: a frangible, substantially incompressible and rigid primary support structure and a secondary support structure which is resilient. The primary support structure supports the weight of the apparatus to be protected, until the event of an earthquake of sufficient magnitude, then the primary support structure will fail, whereupon the secondary support structure takes the load. The latter resiliently yields to protect the apparatus from earthquake damage by decoupling the apparatus from the ground. Shock absorbers may be provided to damp oscillations induced in the system.

3,794,278

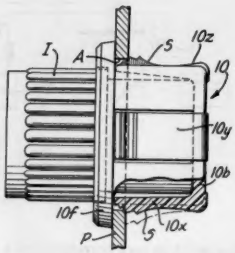
## INSTRUMENT SUPPORTING DEVICE

Sydney W. Frey, Jr., Upland, and Donald L. Gaa, Riverside, both of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Jan. 10, 1972, Ser. No. 216,400

Int. Cl. G12b 9/00

U.S. Cl. 248—27 4 Claims



An instrument supporting device adapted to be pressed directly into a hole or aperture in a panel of any of a plurality of thicknesses and secure therein or thereto any of a variety of instruments, the support device automatically compensating for wear caused by vibration or repetitive removal and reinsertion into the hole in the panel, and permitting easy removal of the support from the panel without twisting or turning. A plurality of stepped resilient fingers or limbs are resiliently stressed inwardly as the support enters the aperture, and spring outwardly to engage the aperture-edge of the panel at the rear thereof and retain a portion of the support tightly against the front face of the panel. Key means may engage in a seat in the panel edge to preclude rotation of the support in the aperture. Preferably the resilient limbs are provided in two or more sets, each set being of different configuration whereby to accommodate a wider variety of panel gages.

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3,794,279

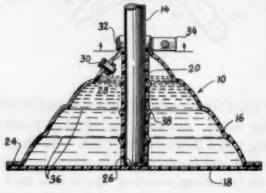
## PORTABLE PEDESTAL FOR LAWN UMBRELLAS, STANCHIONS, AND THE LIKE

Hyman Kramer, c/o Hy Kramer Enterprise, Inc., 1457 Bassett Ave., Bronx, N.Y. 10461

Filed Apr. 24, 1972, Ser. No. 246,830

Int. Cl. F16m 13/00

U.S. Cl. 248—44 5 Claims



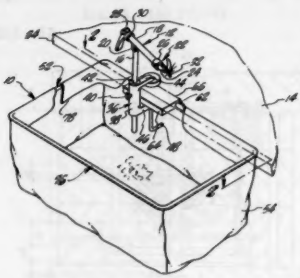
A portable pedestal for lawn umbrellas, stanchions, and the like, said portable pedestal comprising a hollow, collapsible enclosure, having at least one opening formed therein through which a pole can be inserted and the enclosure can be filled with pourable material, such as sand or water, to provide it with structural strength and rigidity, preventing it from collapsing, and weighting it for stability.

3,794,280

## FLY TYING DISPOSAL APPARATUS

Darwin R. Atkin, 354 N. York St., Porterville, Calif. 93257

Filed Jan. 21, 1972, Ser. No. 219,662
Int. Cl. B65b 67/12
U.S. Cl. 248—99 9 Claims



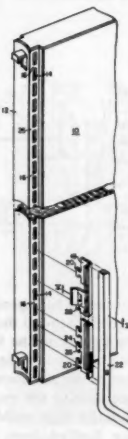
A fly-tying disposal apparatus for use with a fly-tying vise is suitable for both right and left hand tiers and includes a support for disposal bags which is adjustable to maintain the bag in a proper and non-interfering position and work level with respect to the working end of the vise for the collection of waste material and which is movable without dismounting to an inoperative position.

3,794,281

## WALL PANEL LATERAL SUPPORT ASSEMBLY AND LOCKING MECHANISM THEREFOR

Robert J. Munsey, Grand Rapids, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 19, 1972, Ser. No. 264,098
Int. Cl. E04g 3/08, 7/00; F16b 5/07
U.S. Cl. 248—188 5 Claims



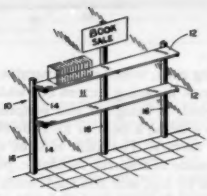
A locking mechanism for securing a lateral support to a free standing wall panel in which a plurality of T-shaped connectors extending from the lateral support engage a complementary plurality of spaced slots in a slotted standard affixed to the wall panel by containing the partitions between the slots in the bottom recesses of the T-shaped connectors. The T-shaped connectors are locked into the spaced slots by means of a latch mechanism which when rotated causes a finger detent thereon to engage the side of one of the partitions opposite that side of the partition engaging the bottom recess of the T-shaped connector to thereby securely lock the partition between the finger detent and the adjacent T-shaped connector.

3,794,282

## COUPLING ASSEMBLY

Irving W. Shell, 442 W. Wellington, Chicago, Ill. 60657

Filed May 17, 1972, Ser. No. 254,289
Int. Cl. A47g 29/02
U.S. Cl. 248—244 3 Claims



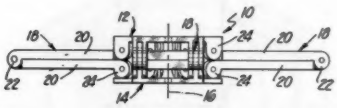

A coupling assembly comprising in combination a support standard having a channel defined therein having opposing faces on the sides thereof, each of the faces of the channel have longitudinally extending grooves defined thereupon on either side of a pocket portion disposed therewithin; an intermediate member or connector means attachable to an article to be supported thereby and having an opening defined therethrough which extends axially of the supported article; and a bolt which extends through said opening in said intermediate member into said channel in said support standard and obtains locking engagement within said channel whereupon said standard, said intermediate member and said bolt are integrally joined to support said article. The locking engagement is obtained either by the coaction of the grooves with a threaded bolt or by the coaction of the pockets with a special end portion of a bolt.

3,794,283

## EXTENSIBLE FRAME

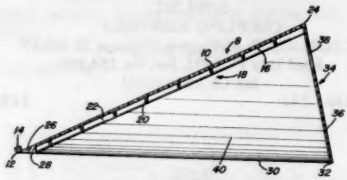
Harold R. Furno, 1144 W. "B" St., Ontario, Calif. 91762

Continuation of Ser. No. 73,794, Sept. 21, 1970, abandoned.
This application Dec. 19, 1972, Ser. No. 316,449
Int. Cl. A47f 5/08; E04h 12/10
U.S. Cl. 248—276 16 Claims



An extensible frame having a pair of rigid end members disposed on a common axis and three articulated arms extending between the members in intersecting planes containing the common axis and hinged to the members in a manner which relative translational movement of the members toward and away from one another along the common axis and restrains the member against all other relative movement. The frame is capable of various uses such as supporting an object for horizontal or vertical movement, an adjustable instrument support, an erectable frame for a building structure, and others.

3,794,284
**BOOK SUPPORTING AND READING RACK**
Harry M. Guenther, P.O. Box 19123, Pensacola, Fla. 32503
Filed Aug. 14, 1972, Ser. No. 280,122
Int. Cl. A47b *19/00*
U.S. Cl. 248—441 5 Claims



A book supporting rack, which is comparable, in a manner of speaking, to a book inclining lectern but which, instead of being atop a pedestal, is designed and adapted to be positioned for use atop a table, a desk or an equivalent relatively stationary support surface. The rack is light in weight and may, if desired, be made of colorful, moldable, plastic material and is characterized by top, side and back walls. The top wall comprises a panel which has a smooth planar surface of an area capable of receiving and supporting an open book in an inclined position and wherein said panel is elevated by an inclining base. The base comprises an upstanding back wall and complemental side walls, and said back and side walls having upper edges united with corresponding marginal edge portions of the top wall or panel. The back and side walls have longitudinal bottom edges which are disposed in a common plane to rest firmly and evenly on a table or the like. The top wall panel has a lower longitudinal edge portion provided with an upstanding rib which constitutes a book positioning and retaining ledge.

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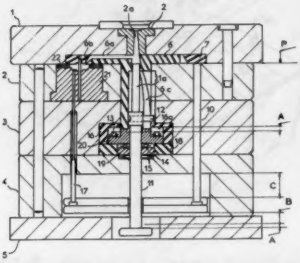
3,794,285
**CONTAINER HOLDING BRACKET**
R. Richard Barts, Huntington, Ind., assignor to Huntington Laboratories, Inc., Huntington, Ind.
Filed Oct. 5, 1972, Ser. No. 295,148
Int. Cl. A47k *1/08*
U.S. Cl. 248—311 3 Claims

A bracket for holding a container. The bracket has a bottom shelf upon which the container is supported. The shelf has a horizontal portion which supports the bottom rim of the container and an outer distal end which extends upwardly to engage the bottom wall of the container. The shelf is integrally connected to a vertical wall which projects outwardly and has apertures thereon for receiving fasteners for the mounting of the bracket. The top portion of the bracket is provided with a recess to grippingly receive the handle of the container.

3,794,286
**MOULD FOR INJECTION MOULDING PRESSES**
Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France
Filed Mar. 14, 1972, Ser. No. 234,530
Int. Cl. B28b *7/10*
U.S. Cl. 249—67 3 Claims



A mould for a press for the injection moulding of thermosetting or thermoplastic materials which opens in two parts in a parting plane and comprises a fixed block and a movable block, wherein there is provided a centre member which has formed therein injection passages and is associated unit the fixed block in such manners as to effect, upon the opening of the mould, a movement of translation followed by a rotation.

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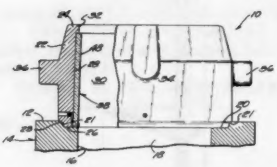
3,794,287
**SUPERIMPOSED HOT TOP AND SEAL**
Donald C. Atkinson, Ellwood City, Pa., assignor to Thiem Corporation, Milwaukee, Wis.
Continuation-in-part of Ser. No. 844,754, July 25, 1969, abandoned. This application Oct. 21, 1971, Ser. No. 191,206
Int. Cl. B22d *7/10*
U.S. Cl. 249—106 5 Claims



A hot top which is adjusted to be superimposed on an ingot mold having an annular recess around the opening in the top of the mold. The hot top can be in the form of a single-use structure or a metal casing having a single-use liner insert unit supported therein. The single use structure and the metal casing are adapted for placement in the recess to form a continuation of the opening in the ingot mold. The structure and the insert liner unit are formed from a heat-destructible refractory material. A heat-destructible gasket formed from a compressible plastic material is secured to the bottom of the structure or the bottom of the panels to form a seal at the juncture of the hot top with the top of the ingot mold.

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**ERRATUM**

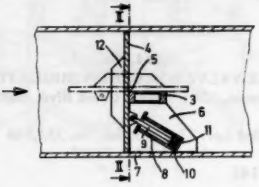
For Class 249—106 see:
Patent No. 3,794,262

3,794,288

## BUTTERFLY VALVE

Guido Dolder, and Alfred Schmalzi, both of Zurich, Switzerland, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Mar. 8, 1973, Ser. No. 339,308
Claims priority, application Switzerland, Mar. 16, 1972, 003902/72
Int. Cl. F16k *31/143*
U.S. Cl. 251—62 15 Claims



Butterfly valve for ducts of hydroelectric power stations, with a web in said duct, extending transversely of said duct and being rigidly secured to said duct, and a flap pivotably mounted on said web; a drive mechanism comprising a servomotor and first connecting means between said flap and said servomotor and second connecting means between said servomotor and said web; said connecting means being arranged in a plane crossing said duct and being perpendicular to the pivoting axis of said flap.

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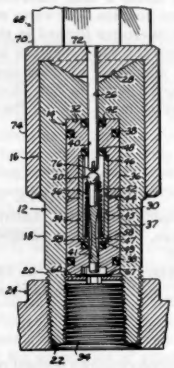
3,794,289

## PRESSURE CONDUCTING PROBE RECEIVING PLUG

Julian S. Taylor, 8600 S.W. 8, Oklahoma City, Okla. 73128

Continuation-in-part of Ser. Nos. 876,349, Nov. 13, 1969, Pat. No. 3,630,080, and Ser. No. 89,682, Nov. 16, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 214,916
Int. Cl. F16l *29/00*
U.S. Cl. 251—149.7 12 Claims



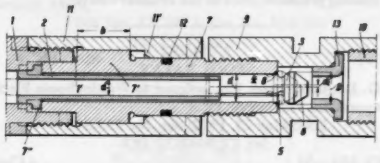
A vacuum and pressure probe receiving plug comprising a generally cylindrical centrally bored body threadedly connected at one end with the wall of a vessel containing a vacuum or fluid under pressure. The body is counterbored from its vessel connected end for receiving a cartridge containing a spring urged valve means movable toward and away from the vessel wall providing and interrupting fluid communication through the counterbore.

3,794,290

## PRESSURE FLUID CONTROL VALVE

Josef Huszar, Kapfenberg, Austria, assignor to Gebr. Boehler & Co. AG, Vienna, Austria

Filed Aug. 2, 1972, Ser. No. 277,382
Claims priority, application Austria, Oct. 19, 1971, 9014
Int. Cl. F16k *31/44*
U.S. Cl. 251—347 6 Claims



The valve serves to control the supply of pressure fluid from a first tubular member constituting a pressure fluid outlet to a second tubular member which forms part of a pressure fluid consumer which is movable relative to said first tubular member between a first position more remote from said first tubular member and a second position nearer to said first tubular member. The valve comprises an inner sleeve secured to said second tubular member and an outer sleeve surrounding said inner sleeve and secured to said first tubular member. The inner and outer sleeves define together a flow path adapted to establish a communication between said first and second tubular members. A valve seat is secured to said outer sleeve and forms a frustoconical constriction in said flow path. A valve cone is disposed in said flow path on the side of said valve seat which is opposite to said inner sleeve and axially movable relative to said valve seat and adapted to sealingly engage the same. Said valve cone has an outside diameter which exceeds the inside diameter of said constriction. Spacing means are disposed between said valve cone and said inner sleeve and arranged to hold said valve cone clear of said valve seat unless said inner and outer sleeves are in a relative position corresponding to said second position of said second tubular member.

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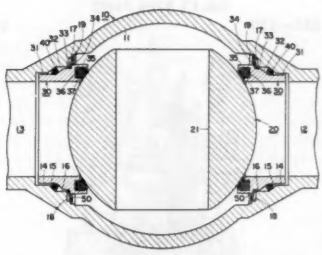
3,794,291

## BALL VALVE APPARATUS

Ryoji Suyama, Yono, Japan, assignor to Kitamura Valve Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1972, Ser. No. 281,327
Claims priority, application Japan, May 18, 1972, 47-48543
Int. Cl. F16k *5/06*
U.S. Cl. 251—171 3 Claims



A ball valve apparatus having a hollow housing in which a spherical valve member is rotatably received. The housing has fluid passages in each of which is axially movably disposed a retainer sleeve having its inner end face formed therein with an annular groove into which a seal ring is fitted for sealing en-

gagement with the valve member. The retainer sleeve has an axially inwardly and radially outwardly inclined outer peripheral surface which cooperates with an inner surface portion of the housing to define an annular space which communicates with the corresponding fluid passage and in which an O-ring is received. The O-ring is radially outwardly and axially inwardly displaceable along the inclined outer surface of the retainer sleeve by the pressure within the fluid passage whereby the O-ring is expanded to exert an increased axial inward biasing pressure force to the retainer sleeve.

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**3,794,292**

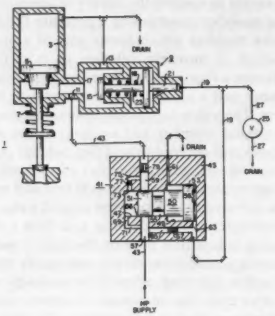
**SPOOL VALVE**

**Karl O. Jaegtnes, Aston, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed May 15, 1972, Ser. No. 253,392**

**Int. Cl. F16k** *31/383*

**U.S. Cl. 251—31** **4 Claims**



A spool valve for automatically limiting the rate of flow of actuating fluid to an ON-OFF fast operating valve when the ON-OFF valve is closed and automatically increasing the rate of flow of actuating fluid as the ON-OFF valve begins to open.

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**3,794,293**

**PRESSURE CONTROL DEVICE FOR REMOTE CONTROL OF MARINE ENGINE**

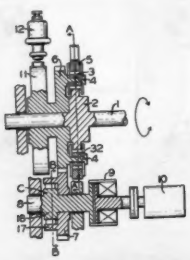
**Tutomu Matuda, Akasi; Hiroo Inque, Amagasaki, and Makoto Takagi, Kobe, all of Japan, assignors to The Nippon Air Brake Co., Ltd., Kobe, Japan**

**Filed Nov. 30, 1972, Ser. No. 310,689**

**Claims priority, application Japan, Dec. 14, 1971, 46-101334**

**Int. Cl. F16k** *31/05*

**U.S. Cl. 251—130** **11 Claims**



Throttle control apparatus for a marine engine employing an electric motor for automatically advancing the throttle at a slow, continuous rate in the navigation speed range of the engine. The apparatus further includes a planetary gear system via which the throttle control handle acts during starting speeds to advance the throttle manually. An electromagnetic clutch couples the motor to the output member of the planetary gear system when the throttle control handle is moved from the starting speed range into the navigation speed range. The planetary gear system is concurrently adjusted in accordance with the selected handle position so as to automatically terminate operation of the motor and consequently maintain the throttle setting in accordance with the selected handle position.

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**3,794,294**

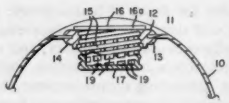
**ADJUSTABLE VALVE FOR USE ON IRRIGATION PIPES**

**Roger M. Sherman, 3381 Stevens Creek Blvd., San Jose, Calif. 95117**

**Filed Apr. 23, 1973, Ser. No. 353,746**

**Int. Cl. F16k** *31/58*

**U.S. Cl. 251—145** **3 Claims**



An adjustable valve for use on irrigation pipes to control the water flow from the pipe or to shut off the water flow. This device is provided with a valve member adjustable in a grommet, said grommet being flexible material. Said grommet fits into a hole in a flattened part of the irrigation pipe. The cylindrical valve member is provided with an external thread matching the internal thread of the grommet or it may have a round external surface in frictional engagement with the grommet. The valve may be of flexible material so that it may be deformed and inserted into the grommet and held by friction in a predetermined adjustment. The valve member is provided with an end wall that is received in a tapered recess of the grommet and forms a seal therewith when the valve member is in closed position. The valve member is provided with a plurality of apertures formed in the cylindrical walls thereof so that when the valve member is moved or pressed into the irrigation pipe some of these apertures are opened into the pipe to permit water to flow from the pipe into the hollow of the valve member and out thereof to irrigate the field.

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**3,794,295**

**SHUTOFF VALVE**

**Richard Huber, Modling Bei Wien, Austria, and Peter Wirz, Unterkulm/Aargau, Switzerland, assignors to Klinger AG, Zug, Switzerland**

**Filed Mar. 2, 1973, Ser. No. 337,748**

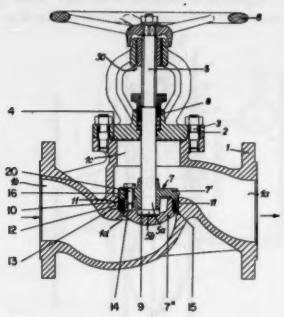
**Claims priority, application Switzerland, Mar. 8, 1972, 3401/72**

**Int. Cl. F16k** *11/14*

**U.S. Cl. 251—189** **13 Claims**

A shutoff valve incorporating a plunger piston which carries at least one axially compressible sealing ring for sealing the piston against the valve housing, and which in each actuated position is subjected to an axial elastic compression which increases in the closed position of the valve plunger piston during further movement of an actuation spindle carrying the piston in the valve closed direction. The sealing ring is clamped between a first piston part or portion and an annular spring which cooperates with a second piston part or portion. In the closed position of the plunger piston, this annular spring bears against a stop fixed to the valve housing, so that the an-

nular spring is displaced relative to both piston parts which are fixedly connected with one another during further movement



of the actuation spindle in the closed direction of the valve in the sense of exerting an additional axial compression upon the sealing ring.

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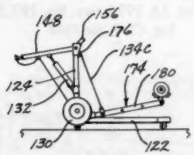
**3,794,296**

**CRANE AND TOW UNIT**

**Roger D. Hasstedt, 4041 Hubbell Ave., Des Moines, Iowa 50317**

**Filed Aug. 10, 1971, Ser. No. 170,545**
**Int. Cl. B60p** *3/12*
**U.S. Cl. 254—8 B** **6 Claims**




A portable trailerable vehicle capable of lifting and towing disabled vehicles and when stationary functioning as a crane to move movable objects to desired locations about the rotational axis of the upright standard. The upright standards and the tongue members are pivotally relative to each other to extend in the same direction or opposite directions. When the unit is collapsed a boom extends upwardly from the standard and a cable extending rearwardly therefrom allows the unit to perform pulling operations as in the straightening of body parts of vehicles. The height of the pulling action is variable with the ground support wheels used. A jack arm may be pivotally connected to the cross frame with a cable connected to the upright standard for use of the unit as a jack. Desired platform structures may be mounted on the outer end of the jack arm. For long lifting distances a winch cable may supplement the crane lifting cable. The transport wheels may be moved between raised and lowered positions through 180° pivotal action with the second set of wheels being stationary on the bottom side of the cross frame or on the wheel mounting arm opposite the first set of wheels. Also, the second set of wheels may be pivotal with the tongue members to move between downwardly and upwardly extending positions. The upper end of the upright standard may alternatively include a light unit to be seen over a disabled vehicle being towed or an extension tongue unit for moving the unit when the upright standard is horizontally disposed. A stabilizer arm extends outwardly from the tongue members and includes a jack having vertically spaced apart mounting brackets for use depending on which set of wheels are in ground engagement. The vertical standard is rotatable between positions substantially perpendicular to the cross frame while adjustable stops permit 360° rotation.

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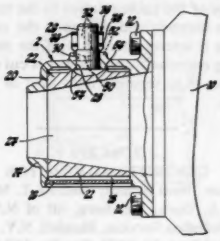
**3,794,297**

**ROTARY VALVE WITH SEALING STRUCTURE**

**Morris J. Duer, Lansing, and William A. Weidman, Okemos, both of Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Jan. 17, 1973, Ser. No. 324,524**
**Int. Cl. F16k** *5/02*
**U.S. Cl. 251—309** **2 Claims**



A valve comprises a housing and a valve member in the housing rotatable between two positions. The valve member has a shaft for rotation projecting through an opening in the housing. Corresponding annular sealing surfaces on the valve member encircling the shaft and on the housing encircling the opening are engageable to prevent escape of fluid through the opening. An arm fixed for rotation with the shaft and engageable with raised external stops on the housing is deformed when engaged with a stop to bias the sealing surfaces into engagement.

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**ERRATUM**

For Class 254—873 see:
Patent No. 3,794,296

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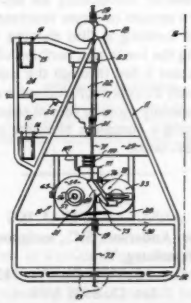
**3,794,298**

**HOISTING MECHANISM FOR ASCENDING AND DESCENDING A CABLE**

**William E. Mauldin, Cincinnati, Ohio, assignor to Hi-Lo Powered Stirrups, Inc., Cincinnati, Ohio**

**Filed Mar. 9, 1972, Ser. No. 233,019**
**Int. Cl. B66d** *1/30*
**U.S. Cl. 254—185 R** **2 Claims**



A novel hoisting mechanism for ascending and descending a freely hanging, single strand of cable that includes a dual drive

sheave-pressure wheel assembly combination which provides the safety of two separate drive sheaves and the threading simplicity of an open breach, and that includes a brake which severely limits downward drift once power is cut off on descending the cable. The preferred embodiment provides a primary drive sheave and a secondary drive sheave located on axes parallel one to the other and driven through a single, main drive shaft. A pressure wheel assembly cooperates with a tension sheave mounted on the primary sheave's drive shaft, the assembly including a series of pressure wheels movable between a first position where same create an open breach between the primary and secondary drive sheaves so as to allow easy threading and unthreading of the cable with the mechanism and a second position where same are spring biased against the cable wound around the tension sheave to prevent slippage of the cable relative to the tension sheave as the mechanism ascends and descends the cable. A special magnetic brake is interconnected with the main drive shaft, the brake being energized when power is cut off on descending the cable so as to severely limit drift of the mechanism down the cable.

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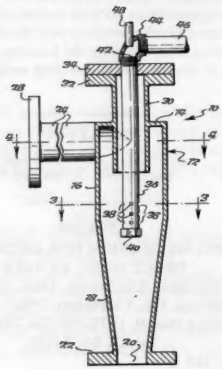
**3,794,299**

## CENTRIFUGAL REACTOR

**Louis E. Wagner, West Seneca; Andrew T. McCord, Snyder, and Joseph A. Dorn, Hamburg, all of N.Y., assignors to Chem-Trol Pollution Services, Blasdell, N.Y.**

**Filed Sept. 23, 1971, Ser. No. 182,941**
**Int. Cl. B01f *15/02***
**U.S. Cl. 259—4** **10 Claims**



A centrifugal reactor comprising an enclosure having an inlet for directing a stream of waste reactant tangentially into the enclosure and forming a film moving in a downwardly spiraling path along the inner wall surfaces of the enclosure. A second waste reactant is fed through the top of the enclosure into a sparger which directs such second waste reactant as a spray against the spirally moving film at substantially right angles thereto effecting a complete blending and neutralization of the two waste reactants.

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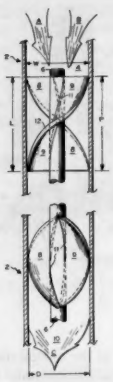
**3,794,300**

## ANNULAR SPIRAL ISG

**Richard E. Harder, Anderson, S.C., assignor to Dow Badische Company, Williamsburg, Va.**

**Filed Dec. 30, 1971, Ser. No. 213,976**
**Int. Cl. B01f *5/00***
**U.S. Cl. 259—4** **5 Claims**

A device for generating internal surfaces within a flowing mass in a tube wherein the tube contains mixer elements adapted to mix a plurality of discrete fluids; and wherein the mixer elements are mounted on a shaft which shaft extends along the direction of flow within the tube. The mixer elements have a pitch to length ratio of about 1. In a preferred form, the mixer elements are formed from twisted involute elements of equal length mounted on the same length of the inner shaft.



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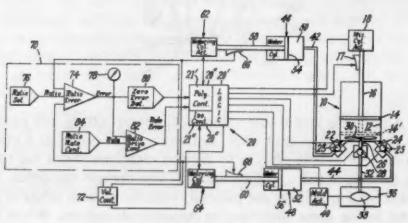
**3,794,301**

## METHOD AND APPARATUS FOR MIXING AND DISPENSING

**Robert C. Simmonds, Jr., Topsfield, Mass., assignor to USM Corporation, Boston, Mass.**

**Filed Oct. 13, 1972, Ser. No. 297,382**
**Int. Cl. B28c *7/04***
**U.S. Cl. 259—7** **16 Claims**



Method and apparatus for the mixing and dispensing of a multiple component material composition wherein said component materials are supplied substantially continuously in controlled ratio in a substantially concurrent mixing and dispensing cycle, and said cycle is repeatable to form successive mixing and dispensing as required in processes such as mold filling.

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**3,794,302**

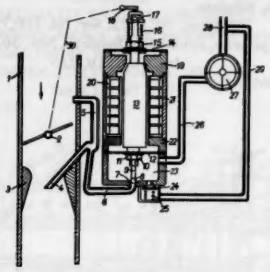
## FLOATLESS CARBURETOR FOR INTERNAL COMBUSTION ENGINES

**Rudolf Diener, Zurich, Switzerland, assignor to Autoelektronik AG, Chur, Switzerland**

**Filed Dec. 5, 1972, Ser. No. 312,263**
**Int. Cl. F02m *51/08***
**U.S. Cl. 261—36 A** **7 Claims**

A floatless carburetor for internal combustion engines comprising a suction tube, an air funnel therein, a spray tube opening within the air funnel, a throttle valve in the suction tube

ahead of the spray tube, and a main nozzle disposed in a fuel chamber for delivering fuel to said spray tube. The main nozzle is formed as a mechanically and electrically controllable regulating valve. The valve member is drivingly connected to a magnetic ram which itself is connected by means of a resilient



intermediary member to the linkage which operates the throttle valve. The magnetic ram can be actuated by electric currents the intensity of which is characteristic for the parameters which determine the preparation of the combustible mixture, whereby an electromagnetic adjustment can be superposed to the mechanical basic adjustment of the throttle valve.

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**3,794,303**

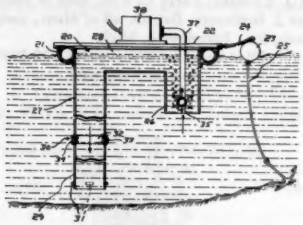
**METHOD AND APPARATUS FOR AERATING BODIES OF WATER**

**Benedict E. Hirshon, 36 Kenwood Rd., Brookline, Mass. 02167**

**Continuation-in-part of Ser. No. 98,656, Dec. 16, 1970, abandoned. This application June 11, 1973, Ser. No. 368,724**

**Int. Cl. B01f *3/04***

**U.S. Cl. 261—61** **36 Claims**



Method and apparatus for aerating bodies of open water utilize unbalanced water columns interconnected at their upper ends to provide continuous aeration of the water at any desired depth. The head on one column is attained by the introduction of air into the other column which serves both to raise and to aerate the water therein. Alternatively, the water may be circulated by mechanical means and the air introduced at the top of its travel. Undissolved air is permitted to escape as it passes between the columns before it enters the return column.

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**3,794,304**

**PNEUMATIC WEIR WATER LEVEL CONTROL FOR COOLING TOWER HOT WATER DISTRIBUTION BASIN**

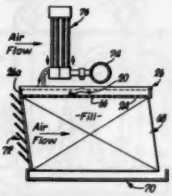
**Robert E. Cates, Leawood, Kans., and Robert M. Mitchell, Kansas City, Mo., assignors to The Marley Company, Mission, Kans.**

**Filed June 19, 1972, Ser. No. 264,147**

**Int. Cl. B01f *3/04***

**U.S. Cl. 261—111** **12 Claims**

A weir assembly has a rotatable weir member whose position for water level control or water diversion is governed by inflation or deflation of a collapsible wall, pneumatically operated tube supporting the weir member. The tube underlies the weir member in disposition such that charging and discharging of air from the tube to vary its cross-sectional size correspondingly raises and lowers the weir member. Segregation of the water flow in the hot water distribution basin of a water cooling tower may thereby be controlled to either vary the cooling capacity of the tower by changing the extent or pattern of water loading on an evaporative cooling structure below the distribution basin thereby affecting its cooling capacity or, in the case of a cooling tower having both wet and dry cooling sections served by a common air mover, to permit




not only variation of respective water loadings but also the relative quantities of air permitted to pass through corresponding wet and dry sections. Use of the weir assembly adjacent one outer extremity of the distribution basin also permits effective prevention of ice formation on the inlet louvers associated with the evaporative cooling structure of the tower by the expedient of simply periodically raising the weir member of the assembly to a point where hot water from the distribution basin is caused to overflow the basin end wall and thereafter cascade down the louvers to the cold water collection basin.

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**3,794,305**

**APERTURED COLUMN TRAY PROVIDED WITH BUBBLE CAPS**

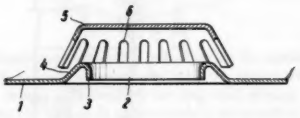
**Hans Joachim Kloss, Hilden, Germany, assignor to Firma Julius Montz GmbH, Hilden, Germany**

**Filed Mar. 13, 1972, Ser. No. 233,998**

**Claims priority, application Germany, Mar. 13, 1971, 2112110**

**Int. Cl. B01f *3/04***

**U.S. Cl. 261—114 A** **6 Claims**



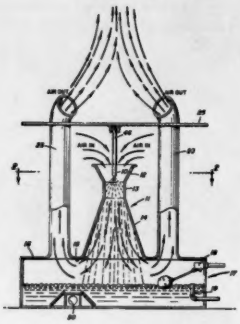
An improvement in a column tray comprising at least one bubble cap disposed over an aperture of a plate, said cap having at least one opening therein, which improvement comprises a marginal edge on said plate adjacent said aperture, which marginal edge is raised from said plate and bent downwardly to define said aperture.

3,794,306

## INJECTOR TYPE COOLING TOWER

John Engalitcheff, Jr., Gibson Island, Md., assignor to Baltimore Aircoil Company, Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 795,516, Jan. 31, 1969, abandoned. This application May 21, 1969, Ser. No. 826,638
Int. Cl. B01f 3/04
U.S. Cl. 261—116 4 Claims



A cooling tower operating on the injection or aspiration principle in which the air is pumped by an injector designed to produce a large air-water interface and a large air-water relative movement for good heat exchange. A common exhaust stack serves a plurality of injectors to provide a construction of large capacity with savings in height requirements and avoidance of recirculation problems.

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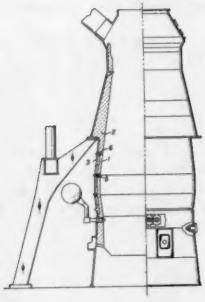
3,794,307

## BLAST FURNACE COOLING SYSTEM

Yoshio Seo, Yokohama, Japan, assignor to Ishikawajima Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 25, 1971, Ser. No. 156,918
Claims priority, application Japan, July 4, 1970, 45-58442
Int. Cl. C21b 7/10
U.S. Cl. 266—32 5 Claims



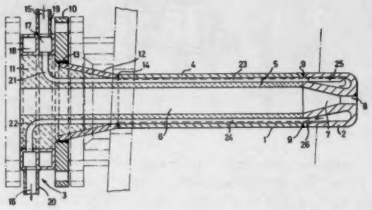
A blast furnace cooling system employing staves cooling system, and providing projection which interposed replaceable between staves arranged upper and lower direction of the furnace.

3,794,308

## DEVICE FOR INJECTING HOT GASES INTO A SHAFT FURNACE

Nicolas Gerassimos Ponghis, and Claude Henri Vanosmael, both of Liege, Belgium, assignors to Center De Recherches Metallurgiques-Centrum Voor Research In De Metallurgie, Brussels, Belgium

Filed Nov. 30, 1972, Ser. No. 310,798
Claims priority, application Belgium, Nov. 30, 1971, 776093
Int. Cl. C21b 7/16
U.S. Cl. 266—41 21 Claims



The device has a longitudinal unit comprising an outer metal tube and an inner refractory tube. A liquid-cooled nozzle at one end of the unit converges to a narrow outlet. A terminal element at the other end of the unit serves to connect the device to the outer furnace wall, to connect the bore of the longitudinal unit to a hot gas supply, and to connect the device to a cooling liquid supply.

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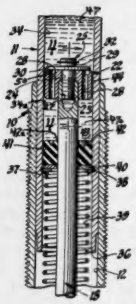
3,794,309

## ADJUSTABLE STROKE SHOCK ABSORBER

William J. Chrokey; Larry C. Ellis, both of Farmington, and Robert J. Heideman, Detroit, all of Mich., assignors to Ace Controls, Inc., Farmington, Mich.

Filed Dec. 29, 1972, Ser. No. 319,289
Int. Cl. F16g 5/00
U.S. Cl. 267—34 12 Claims



An adjustable stroke shock absorber having an outer tube slidably mounted in an inner tube and with the inner tube having an outer end adapted to receive an impact load. A piston rod is fixed in the outer tube and is extended into the inner tube and carries a fixed piston head. The piston head is provided with a fluid return passage means and a check valve to close said passage means when the inner tube is moved into the outer tube during a shock absorbing movement. A seal is disposed in the inner tube in a position around the piston rod, and it is movable with the inner tube. The inner tube is provided with fluid whereby when a shock load is taken on the outer end of the inner tube, the inner tube will move into the

outer tube and force the fluid therein around the fixed piston head and into a chamber behind the fixed piston head. After the shock load has been absorbed, a return spring moves the inner tube to the initial starting position.

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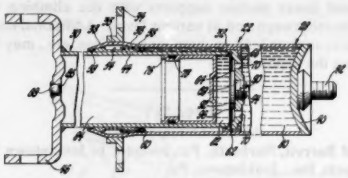
3,794,310

## HYDROPNEUMATIC ENERGY ABSORBING UNIT

Albert B. Mewhinney, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1972, Ser. No. 301,507
Int. Cl. F16f 5/00
U.S. Cl. 267—139 3 Claims



A hydropneumatic energy absorbing unit of the type including a cylinder tube subassembly having a piston tube subassembly telescopically disposed thereon and further including a valve arrangement for altering the energy absorbing characteristics of the unit and for retarding the rate of relative telescopic extension of the piston tube subassembly. The valve arrangement includes a valve disc with a circular aperture therein disposed on the piston tube subassembly, and an adjusting member mounted on the piston tube subassembly with a cylindrical boss portion projecting into the circular aperture. The boss portion cooperates with the disc in defining an annular throttling orifice the area of which is proportional to the pressure of the working fluid of the unit. The energy absorbing characteristics of the unit are adjustable through progressive movement of the boss portion further into the circular aperture.

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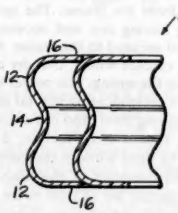
3,794,311

## COILED LOAD ELEMENT

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Filed May 15, 1972, Ser. No. 253,302
Int. Cl. F16f 1/34
U.S. Cl. 267—158 14 Claims




A load element consisting of a strip of material which is convoluted in cross section and which material is ductile and characterized in undergoing work hardening when stressed to beyond the elastic limit. The load element, due to the above mentioned characteristics, is characterized in deforming under substantially constant load once the resiliency thereof is overcome. The coiled load element can be in the form of a fractional part of a convolution or it can be in the form of multiple convolutions arranged either spirally or helically. The load element can be combined with a seal element and thereby form a combination which simultaneously seals between a pair of opposed members while exerting a substantially constant load therebetween.

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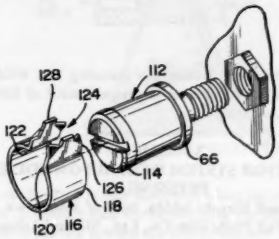
3,794,312

## CLUTCH SPRING

Leroy W. Freeby, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 35,698, May 8, 1970. This application June 9, 1972, Ser. No. 261,349
Int. Cl. F16f 1/06
U.S. Cl. 267—156 9 Claims




A clutch spring for use in calibration assembly including a sleeve-like body having first and second longitudinal edges spaced from each other and a leg extending from one of the longitudinal edges to form a stop. The calibration assembly includes the above described clutch spring gripping a cylindrical clutch surface of a rotatable adjustment member which is adapted to engage a thermostat of the type operating a control device in response to temperature variations and a temperature adjusting device controlling the position of the adjustment member.

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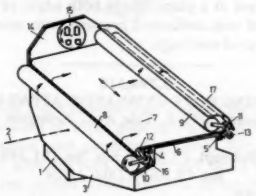
3,794,313

## X-RAY EXAMINING APPARATUS

Helmut Berger, and Alfred Hahn, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Jan. 18, 1971, Ser. No. 107,169
Claims priority, application Germany, Jan. 30, 1970, P 20 04 182.1; Nov. 7, 1970, P 20 54 810.1
Int. Cl. A61g 7/08
U.S. Cl. 269—322 2 Claims



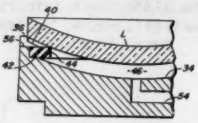
An X-ray examining apparatus has a bed for the patient with a sheet which extends substantially over the entire length of the bed and which is moved by holding and driving means transversely to the bed so as to completely more sideways the body of the patient lying upon the bed. Means are provided to hold the patient from the sides. The invention is particularly characterized by rollers extending parallel to opposite sides of the bed and constituting a part of the holding and driving means. The sheet which is of limited length is unrolled from any one of the rollers and is simultaneously wound upon the other roller, possibly with the use of guide rollers. Means are provided for holding the sheet on the surface of the bed upon which the patient lies.

3,794,314

## VACUUM CHUCK FOR OPHTHALMIC LENS FINISHING MACHINERY

**Orin W. Coburn, and Joe D. Stith, both of Muskogee, Okla., assignors to Coburn Optical Industries, Inc., Muskogee, Okla.**

**Filed Jan. 13, 1972, Ser. No. 217,469**
**Int. Cl. B25b** *11/00*
**U.S. Cl. 269—21** **1 Claim**



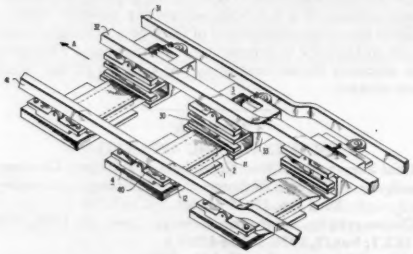
A vacuum chucking system for securing and holding an ophthalmic lens blank without the requirement of forming a block to a surface thereof.

3,794,315

## BAG CONVEYOR SYSTEM WITH AUTOMATIC EDGE PRESSING

**Keiji Kaneko, and Hiroshi Ishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan**

**Filed July 19, 1971, Ser. No. 163,693**
**Claims priority, application Japan, July 17, 1970, 45/62666**
**Int. Cl. B23q** *7/04*; **B65b** *51/10, 65/00*
**U.S. Cl. 269—56** **2 Claims**



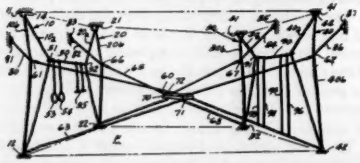
A bag, such as an envelope, a sack, etc., is clamped on a moving conveyor at a place where both edges of the bag are cut off by fixed cam controlled pressing units associated with respective edges of said bags.

3,794,316

## CLIMBING ROPE GYMNASTIC APPARATUS

**Thomas G. Toman, 210 S. Yale Ave., Arlington Heights, Ill. 60005**

**Filed Sept. 17, 1971, Ser. No. 181,349**
**Int. Cl. A63b** *7/04, 17/04*
**U.S. Cl. 272—60** **12 Claims**



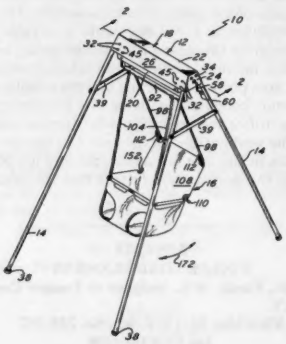
A multi-purpose gymnastic apparatus which is adaptable to indoor and outdoor play areas and which is quick and inexpensive to install is described. The apparatus comprises a plurality of thin, elongated, flexible support members which are vertically disposed by being anchored at the top and bottom ends to anchor supports and a plurality of climbing ropes horizontally and limply suspended between various ones of the support members. The ends of the climbing ropes have adjustable connectors which are detachably secured along the length of the vertically disposed flexible support members. The upright support members are of a flexible material which may include in part a chain link portion which cooperates with the adjustable connectors of the climbing ropes to provide the adjustable connections. The flexibility of the apparatus is illustrated by the fact that two, three, four or more upright support members may be arranged in various configurations between upper and lower anchor supports with the climbing ropes strung therebetween and at various levels. Additional exercising devices such as ladders, bars, rings, swings, etc., may be arranged on the apparatus.

3,794,317

## AUTOMATIC SWING

**Edmund Barrett, Narberth, Pa., assignor to Jenkintown Metal Products, Inc., Jenkintown, Pa.**

**Continuation-in-part of Ser. No. 885,525, Dec. 16, 1969, Pat. No. 3,667,756. This application Jan. 19, 1971, Ser. No. 107,663**
**Int. Cl. A63g** *9/16*
**U.S. Cl. 272—86** **4 Claims**



A child's swing operated by a spring motor. The swing includes a frame, upstanding legs supporting the frame and a swing seat suspended from the frame. The spring motor includes a coiled spring having one end secured to a ratchet wheel and the other end secured to the frame. A pair of pawls alternately engage the ratchet wheel, thereby controlling the release of the tension on the spring. The power of the spring in turn drives the seat in a reciprocating pivotal movement. The spring is formed from spring steel, and has a square cross-section. By utilizing the square cross-section, a spring of increased diameter can be used without the coils of the spring skewing. The increased diameter of the main coiled spring permits the swing to operate for at least twice as long as the prior art automatic swings which were powered by coiled springs.

3,794,318

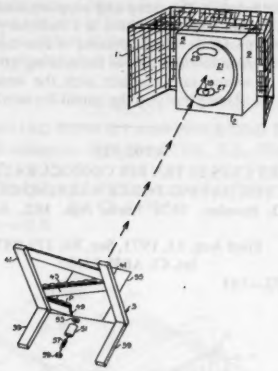
## HOCKEY PUCK PRACTICE SHOOTING APPARATUS

**Lloyd G. Holmes, 460 Wilcot Ave., St. Louis, Mo. 63122**

**Filed Mar. 14, 1973, Ser. No. 341,289**
**Int. Cl. A63b** *71/02, 69/00*; **F41b** *15/00*
**U.S. Cl. 273—1 B** **9 Claims**

Hockey puck practice shooting apparatus includes a target comprising a housing with a rotatable disc-shaped shield

rotatably mounted on its front wall. The front wall is formed with holes large enough to receive a hockey puck and spaced one or more radial distances from the axis of the shield and the shield is provided with one or more arcuate slots of equal radii



with the holes so as to register with the holes for a length of time proportional to the angular length of the slots and the rotational velocity of the shield. A puck ejector is electromechanically synchronized with the operation of the shield.

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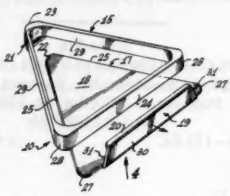
**3,794,319**

**COMBINED BILLIARD BALL RACK AND SHOE ASSEMBLY**

**Marvin A. Miller, 4323 W. Pico Blvd., Los Angeles, Calif. 90019**

**Filed Sept. 14, 1971, Ser. No. 180,314**
**Int. Cl. A63d** *15/00*
**U.S. Cl. 273—22** **6 Claims**



A conventional triangular rack for billiard balls, combined with a removable shoe comprising a triangular base plate covering the lower side of the rack, and an integrally molded handle having a flange overhanging one sidewall of the rack. A cup-like retainer is nailed onto the nose of the rack with the bottom wall of the retainer spaced below the bottom edge of the rack a sufficient distance to define a slot for slidably receiving and holding the nose of the base plate.

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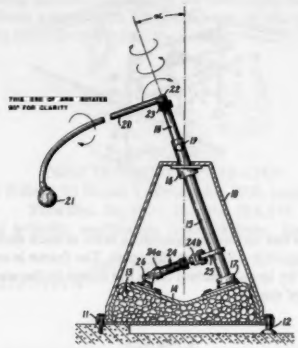
**3,794,320**

**RECREATIONAL APPARATUS**

**Gustave H. Salmont, 916 Greentree Rd., Pacific Palisades, Calif. 90272**

**Filed June 17, 1971, Ser. No. 154,003**
**Int. Cl. A63b** *69/40*
**U.S. Cl. 273—29 A** **16 Claims**

A stroke developing apparatus in which a tethered object is supported from a shaft rotatable on an inclined axis so that the weight of the object will return it to a position of rest by gravity, and in which provision is made for limiting the rotation of the shaft to less than a complete rotation and cushioning the



rotation of the shaft in one direction when the object has been subjected to impact and for controlling the rate of return of the object by gravity toward the rest position.

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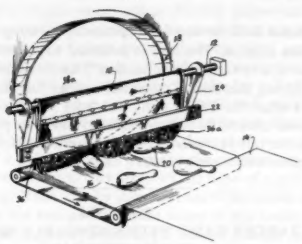
**3,794,321**

**COMBINED BOWLING PIN WIPING MECHANISM, CONVEYOR AND PICK-UP MECHANISM**

**Lynn Goldstein, and Joe W. Bounds, both of Dallas, Tex., assignors to Texel Industries, Inc., Cleburne, Tex.**

**Filed Mar. 28, 1973, Ser. No. 345,701**
**Int. Cl. A63d** *5/10*
**U.S. Cl. 273—54 R** **4 Claims**



A pin wiping cloth is suspended above a pin conveyor immediately forward of a pin pick-up mechanism. The wiping cloth is provided with chemically treated tufts on opposite sides thereof with the tufts on one side being engaged with pins as they are carried toward the pick-up mechanism by the pin conveyor and the tufts on the opposite side being engaged with pins which have been carried to the opposite side of the wiping cloth by the pin conveyor and before they are picked up by the pick-up mechanism.

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**3,794,322**

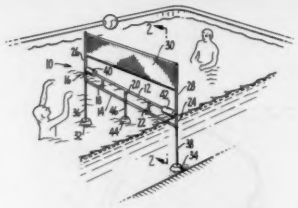
**WATER VOLLEYBALL NET**

**John N. Rosekrans, Jr., San Francisco, Calif., assignor to Kransco Manufacturing, Inc., South San Francisco, Calif.**

**Filed Sept. 8, 1972, Ser. No. 287,539**
**Int. Cl. A63b** *71/00*
**U.S. Cl. 273—95 R** **7 Claims**

A water volleyball net has a rectangular frame having floats attached to an upper portion thereof, and a weight suspended

from a lower portion thereof whereby any deflection of the rectangular frame from a vertical plane will produce a couple tending to return the frame to an upright position.



The frame has upwardly extending arms at each end thereof and a net suspended between the arms. The frame is anchored in the water by lines attached from the frame to the weights on the bottom of the pool.

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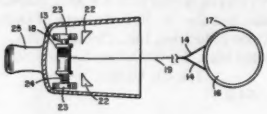
**3,794,323**

**CENTRIFUGAL EXPULSION AND RETRACTION APPARATUS WITH TETHERED OBJECT**

**Preston Johnson, c/o 399 Deli, 399 8th Ave. (30th), New York, N.Y. 10001**

**Filed Feb. 21, 1973, Ser. No. 334,475**
**Int. Cl. A63b** *71/02*
**U.S. Cl. 273—97 R** **5 Claims**



A hand held device for repeatedly ejecting and receiving ball-like objects. The ball is fastened to a string that is connected to a rewinding mechanism. This mechanism is powered by a spring that stores potential energy for the return of the object when the ball is flung out from its housing chute. The rewinder causes the ball to return within close proximity of the chute but not necessarily directly therein. Other ball-like objects are discs or even rotating dual disks.

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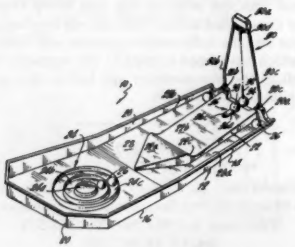
**3,794,324**

**TARGET GAME WITH SWINGABLY MOUNTED PROJECTING BALL**

**Walter Moe, Huntington, N.Y., assignor to Aurora Products Corp., West Hempstead, N.Y.**

**Filed June 22, 1971, Ser. No. 155,529**
**Int. Cl. A63b** *68/04*
**U.S. Cl. 273—101** **6 Claims**



A game of skill which is a modified form of the indoor target game of skee-ball. The game includes a playing alley which supports at one end thereof a swingably-mounted drive ball to be manipulated by the player for propelling a series of playing balls along a ramp. The ramp is constructed to catapult the playing balls into concentric scoring troughs located at the other end of the playing alley. An adjustable impact-transfer device is mounted on the ramp and supports successive playing balls in impact-transfer relation to a stationary impact ball. The impact-transfer device is adjusted to aim the playing ball supported thereon towards one of the scoring troughs and the drive ball is swung into contact with the impact ball for propelling the playing ball into the aimed-for scoring trough.

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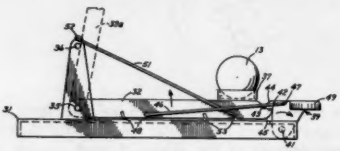
**3,794,325**

**TARGET CUPS IN TEN PIN CONFIGURATION AND PROJECTOR HAVING FORCE VARYING CAPABILITY**

**Herbert O. Stender, 1678 Paris, Apt. 102, Aurora, Colo. 80010**

**Filed Aug. 12, 1971, Ser. No. 171,087**
**Int. Cl. A63b** *71/02*
**U.S. Cl. 273—101** **5 Claims**



An aerial bowling game has a target assembly with open receptacles arranged in a tenpin configuration and an upright backboard behind the receptacles to deflect a projectile into a desired of the receptacles according to the skill of the player. An improved catapult-type projectile launcher tosses the projectile toward the target assembly with a preselected force, the scoring of the game closely following that of bowling. The launching catapult arm is biased to vary the force of launch. An independent biasing element is also supplied to hold the launching arm in place by a trigger member.

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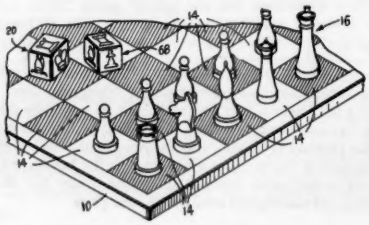
**3,794,326**

**CHESS GAME APPARATUS INCLUDING DICE**

**Norman Bialek, 14 Broadview Rd., Westport, Conn. 06880**

**Filed Jan. 2, 1973, Ser. No. 320,439**
**Int. Cl. A63f** *3/02*
**U.S. Cl. 273—131 KC** **1 Claim**



A modified chess game comprising a game board, 32 chess pieces, and a pair of dice adapted to be used during play, in order to impart an element of chance to the game. The dice have six symmetrical and square faces, the faces being marked with identifying designations resembling the profiles of different playing pieces of a conventional chess set. In one embodiment, a die has its six faces marked with symbols resembling the profiles of a Pawn, Rook, Knight, Bishop, Queen and

King, respectively. Each player alternately throws the dice and is permitted to move one of his own pieces corresponding to the symbol appearing on the upward face of either die, or if this is not possible, he can then move any one of his other pieces. In an alternate embodiment, the dice each have one blank face, indicating a free move, whereby a player is permitted to move any one of his pieces when such a blank face has appeared on either of the thrown dice. The permissible moves of each playing piece follow conventional chess rules.

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**3,794,327**

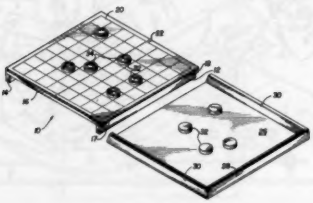
**GAME BOARD SUPPORT AND INVERTING TRAY**

**William H. Washington, 5404 Sheriff Rd., N.E., Washington, D.C. 20027**

**Filed Mar. 15, 1973, Ser. No. 341,797**

**Int. Cl. A63f** *3/0*

**U.S. Cl. 273—148 R** **1 Claim**



A support including a pair of transversly extending members and a pair of longitudinally extending members mounted on and extending from one transverse member to a point beyond the other transverse member. A game board with playing pieces is supported on this framework. A tray with upstanding rear and side edges is inverted over the board and support framework. The side edges of the tray are spaced apart a distance greater than that of the spacing of the longitudinal members. By inverting the whole device and then removing the support and gameboard and playing pieces are left in inverted position in the tray.

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**3,794,328**

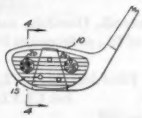
**GOLF CLUB HEAD**

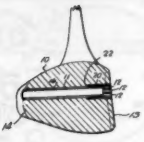
**Earl B. Gordon, 1617 Rangeland Rd., Louisville, Ky. 40219**

**Filed Dec. 1, 1972, Ser. No. 311,107**

**Int. Cl. A63b** *53/04*

**U.S. Cl. 273—167 E** **7 Claims**





A conventional wooden golf club head, contains a pair of parallel air passages beginning at the ball striking area and terminating at the rear of the club. The passages are located substantially midway between the top and bottom surfaces of the head and are spaced from each other, with one passage being located near the toe of the head and one near the heel. A perforated insert occupies each passage and is coplanar with the ball striking surface. The inserts are threadedly engaged with hollow brass tubes which fill the portion of the passageways extending away from the striking surface.

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**3,794,329**

**GOLF TEACHING APPARATUS**

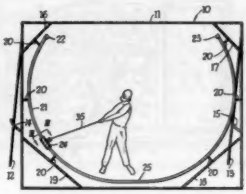
**Kenneth Wilson, 70 Maida Vale, London W.9, England**

**Filed Dec. 30, 1971, Ser. No. 214,171**

**Claims priority, application Great Britain, Jan. 1, 1971, 136/71**

**Int. Cl. A63b** *69/36*

**U.S. Cl. 273—191 A** **6 Claims**



Apparatus for assisting in the teaching of the game of golf comprising a substantially rigid, ovately curved track lying substantially in a single plane and preferably supported in a frame which is adjustable so that the plane of the track to the vertical is adjustable, a runner mounted on the track so as to be freely slidable along the track and an extensible shaft pivotally attached to the runner preferably by a ball and socket joint so as to give universal pivotal and rotational movement of the shaft relative to the runner. In use, the outer end of the shaft is grasped by the user and the shaft is swung in the manner of a golf club so as to move the runner along the track on a plane similar to that taken by the head of a golf club during the swing. If the user by incorrect use of his wrists, arms or body moves the runner out of the plane of the track, friction is set up between the runner and the track and the runner stops, indicating to the user the point at which his swing has started to deviate from the plane of the track. An important feature of the apparatus is the provision of a flat portion at the lowermost point of the track in the hitting area of the swing which imparts to the user a correct follow through in the impact area.

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**3,794,330**

**GAME PHONOGRAPH**

**Gordon H. Buck, Torrance; John H. Northrop, both of La Canada, and Don C. Willis, Marina del Rey, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.**

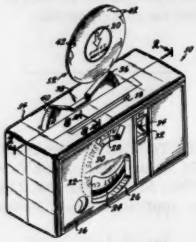
**Filed June 9, 1972, Ser. No. 261,190**

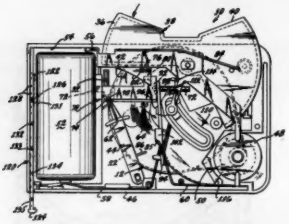
**Int. Cl. G11b** *3/00*

**U.S. Cl. 274—1 G** **1 Claim**

A toy phonograph suitable for use in a game where one player secretly chooses one of several records and inserts it into the phonograph while the other player chooses an initial rotational position of the record, including a mechanism for

readying the phonograph to play but which prevents actual playing until a switch is manually operated. Every time the record is changed or replayed, a lift cam is pivoted to lift the





tone arm, the lift cam being latched in the lift position until a manual switch is operated. The lift cam also moves a switch actuator which wedges between a pair of resilient switch contacts to separate them.

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**3,794,331**

**CHANGE SPINDLE FOR USE IN AN AUTOMATIC RECORD CHANGER**

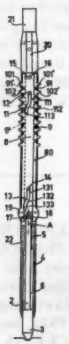
**Martinus Johannes Holl, La Lande Patry, France, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Oct. 28, 1971, Ser. No. 193,401**

**Claims priority, application France, Nov. 2, 1970, 7039410**

**Int. Cl. G11b** *17/04*

**U.S. Cl. 274—10 S** **9 Claims**



The invention relates to a change spindle for use in an automatic record changer, and more particularly to a spindle having a hollow cylindrical body and a central operating rod which is axially movable in the cylindrical body and co-operates with elements for supporting the records. The elements are retractable into the cylindrical body and support the records in spaced relation.

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**3,794,332**

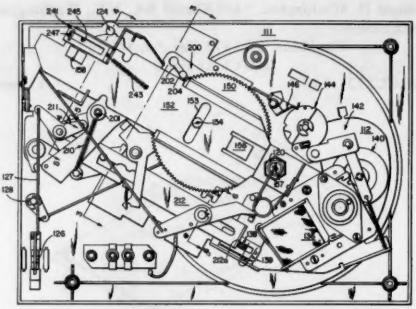
**AUTOMATIC RECORD CHANGER**

**David C. Bailey, Occoquan, Va., assignor to General Electric Company, Syracuse, N.Y.**

**Filed Dec. 28, 1971, Ser. No. 212,896**

**Int. Cl. G11b** *15/00*

**U.S. Cl. 274—10 R** **22 Claims**



An automatic record changer, including a velocity tripping mechanism for initiating a record-changing cycle, is provided with a disabler which prevents operation of the velocity tripping mechanism responsive to the positioning of a control handle carried by the changer. A tone arm positioning mechanism is provided which positions the tone arm for the playing of records of various sizes responsive to the setting of a control knob carried by the changer. A cueing mechanism, which functions independently of the tone arm positioning mechanism, may be operated by an operator to raise the tone arm from a record and return it thereto after the tone arm position has been manually laterally adjusted by the operator. In conjunction with the tone arm positioning and cueing mechanism, there is provided a clutch for resisting undesirable lateral tone arm motion whenever the tone arm is displaced from the turntable. An automatic shutoff mechanism, responsive to the position of the balance arm after play of the last record is provided to cease operation of the record changer upon completion of the last record.

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**3,794,333**

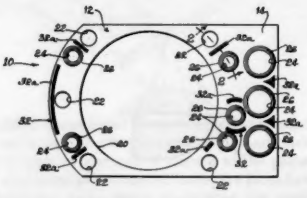
**GASKET**

**Daniel E. Czernik, Hinsdale, and Donald J. McDowell, Riverside, both of Ill., assignors to Felt Products Mfg., Co., Skokie, Ill.**

**Filed July 20, 1972, Ser. No. 273,408**

**Int. Cl. F16j** *15/10*

**U.S. Cl. 277—180** **7 Claims**



A method of making a gasket and a gasket having an elastomeric sealing pattern and a control pattern for limiting

the degree of compression of the sealing pattern. A relatively incompressible material, such as an epoxy resin formulation is positioned on the face of a gasket to protect a relatively compressible material, such as a silicone rubber and prevents its destruction. The epoxy and silicone patterns may be deposited by silk screening processes.

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3,794,334

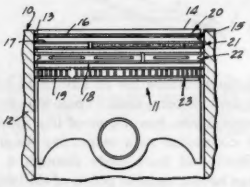
## PISTON RING FACINGS

**Herbert F. Prasse, St. Louis, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.**

**Division of Ser. No. 36,143, May 11, 1970, Pat. No. 3,697,091. This application Oct. 12, 1971, Ser. No. 188,482**

**Int. Cl. F16j 9/00**

**U.S. Cl. 277—235 A** **4 Claims**



This invention covers piston rings, including compression and oil control rings for internal combustion engine pistons, having a bearing face coated with a hard coating, particularly exhibiting good scuff-resistance comprising a zirconium oxide base coating. The coating is preferably a plasma jet applied coating formed in situ on the bearing face.

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3,794,335

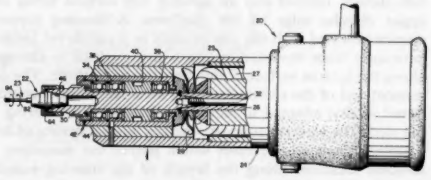
## DEVICES FOR ATTACHING ACCESSORIES

**Clyde David Thackston, Columbia, S.C., and Jack Kasabian, Frankville, Wis., assignors to Rockwell International Corporation, Pittsburgh, Pa.**

**Continuation of Ser. No. 7,068, Jan. 30, 1970, abandoned. This application May 19, 1972, Ser. No. 255,249**

**Int. Cl. B23b 31/10**

**U.S. Cl. 279—23** **6 Claims**



Devices for attaching accessories to the rotatable output members of tools in which the accessory is inserted in a chuck member which rotates with the tool output member and in which a spring in the chuck member fixes the accessory to the chuck member for rotation therewith.

3,794,336

## SKI BINDING WITH SKI BRAKE

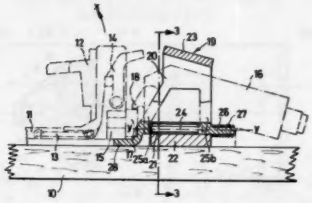
**Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co./G.m.b.H., Leonberg near Stuttgart, Germany**

**Filed Oct. 18, 1971, Ser. No. 190,352**

**Claims priority, application Germany, Oct. 23, 1970, G 70 39 190.1**

**Int. Cl. A63c 7/10**

**U.S. Cl. 280—11.13 B** **24 Claims**



A ski binding which is provided with a ski brake for slowing down or stopping a ski which has separated from the boot of a skier, comprising a brake member pivotable about an axis adjacent to and along one lateral edge of the ski and in an inactive nonbraking position directly or indirectly engaging with the lower side of the boot sole and especially with the lower side of a sole plate which is separated from the ski only if a strong force acts upon the boot, and spring means for pivoting the brake member to its braking position when released from the boot.

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3,794,337

## FRONT SUPPORTING MECHANISM OF A SKI SAFETY BINDING

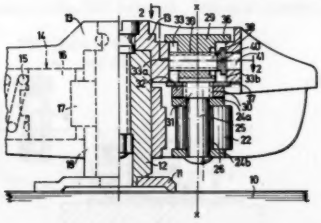
**Brigitte Sittman, Stuttgart, Germany, assignor to Baubeschlagfabriken Gretsch & Co. G.m.b.H., Leonberg near Stuttgart, Germany**

**Filed Feb. 5, 1971, Ser. No. 112,917**

**Claims priority, application Germany, Feb. 7, 1970, 2005664; Dec. 23, 1970, 2063359**

**Int. Cl. A63c 9/00**

**U.S. Cl. 280—11.35 T** **37 Claims**



A mechanism for supporting the front or toe part of a ski boot and for normally locking it in a central position on the ski and for releasing it laterally when excessive torsional forces occur. The mechanism comprises a supporting unit which is normally locked in a central position and adapted to be released therefrom and is provided with a pair of boot supporting arms which may be rigid with the main part of the unit or pivotably adjustable to different positions. Between these arms the supporting unit is provided with one or a pair of rotatable rollers upon which the boot likewise engages and on which it may roll laterally with a rolling friction when the supporting unit is released.

3,794,338

## SAFETY RELEASE SKI BINDINGS

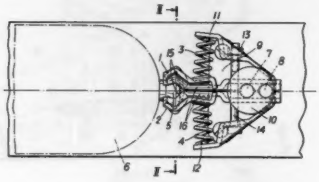
Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Gertsch AG, Zug, Switzerland

Filed Apr. 12, 1972, Ser. No. 243,174

Claims priority, application Austria, May 3, 1971, A 3793/71

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T 10 Claims



A knob-like element is fixed rigidly to one end of the boot. A pair of spring loaded levers are pivotally mounted onto the ski and arranged for embracing the knob-like element when the boot carrying same is appropriately positioned on the ski. Spring loading of the levers is such as to permit them to separate, which separation permits insertion and removal from a position of embracement thereby of said knob-like element. The levers further define a funnel-shape portion immediately behind the release edges of the levers to facilitate entry between said levers of said knob-like element or to permit separation of said levers by insertion into said funnel-shaped opening of a ski pole.

3,794,339

## RELEASABLE SKI BINDING

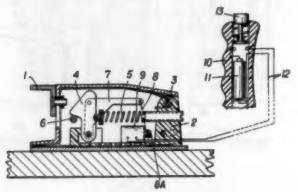
Thomas Gordon Smolka, Wien-Mauer, Austria, assignor to Gertsch AG, Zug, Switzerland

Filed Apr. 12, 1972, Ser. No. 243,291

Claims priority, application Austria, May 21, 1971, A 4384/71

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 M 13 Claims



A ski binding is held in normal operating position by releasable, mechanical parts and is preferably urged into such position by resilient means. A rotatable electric motor is mounted in association with such ski binding and is provided with suitable means responding to activation of the motor for withdrawing said mechanical parts against said resilient means out of holding position. Said motor may be activated in any convenient manner, as manually by the closing of a switch by the skier or by remote control or automatically in response to bio-electrical currents within the muscles of the skier.

3,794,340

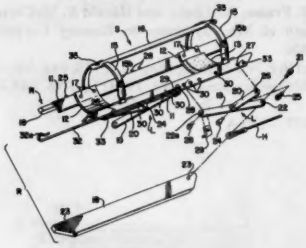
## ADJUSTABLE SKID FOR PIPE INSPECTION OR SURVEY EQUIPMENT

Joseph J. Tartabini, Independence, and Frank L. Sirk, South Euclid, both of Ohio, assignors to United Survey, Inc., Cleveland, Ohio

Filed July 13, 1972, Ser. No. 271,566

Int. Cl. B62b 13/16

U.S. Cl. 280—15 9 Claims



A basic clamping cradle for an elongated tubularly cased TV or photo strip camera, used in pipe survey or inspection and similar operations, has a pair of like elongated bottom runners each connected to a respective longitudinal frame element at front and back ends through a pivotally extensible linkage having variable points of shiftable attachment, whereby the runner spacing may be adjusted to support a camera substantially at the axis of pipes of different sizes within its range.

3,794,341

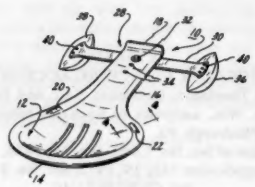
## SNOW SLED AND THE LIKE

Robert Torok, 1116 W. Stewart Ave., Flint, Mich. 48504

Filed Jan. 31, 1972, Ser. No. 221,914

Int. Cl. B62b 13/08

U.S. Cl. 280—21 R 9 Claims



A sled, particularly adapted for use over snow, having a disc-shaped platform with traction ribs disposed along the bottom surface thereof and an annular rim formed along the upper circular edge of the platform. A steering support member formed with the rim extends in a cantilever fashion outwardly from the platform in a plane which is elevated above the bottom surface of the disc-shaped platform. The outermost end of the steering support member has an upwardly flared section adapted to mount a cable to permit towing of the sled. The steering support member has a plurality of longitudinally spaced apertures which permit the mounting at selected locations along the length of the steering support member of a steering arm which, in turn, has mounted at its opposite ends elongated spherical steering elements which function to change the direction of the sled when the steering arm is rotated about its point of attachment to the steering support member. The sled is provided with a pair of support handles disposed on opposite sides of the rim and angularly spaced from the support member to provide the rider thereof with a means for supporting himself. In one embodiment, the

sled is provided with integrally formed foot supports adapted to provide a means to enable a passenger to stand on the platform during forward motion thereof, while the steering arm is provided at its opposite ends with means for mounting a cable or the like to permit the passenger to steer the sled while the passenger stands.

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3,794,342

## AUTOMOBILE VEHICLE

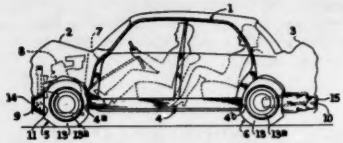
Armand Froumajou, Pontoise, and Claude Chillon, La Celle, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of, France

Filed Dec. 3, 1971, Ser. No. 204,587

Claims priority, application France, Dec. 16, 1970, 70.45367

Int. Cl. B62d *21/00*; B60r *19/04*

U.S. Cl. 280—106.5 R 11 Claims



Vehicle having a passenger compartment constituted by a rigid unit, a relatively more deformable front part and rear part. There is provided in front of each front wheel and/or at the rear of each rear wheel a shoe which is located substantially mid-way of the height of the wheel and substantially in a longitudinal plane containing the wheel. The shoe is designed to deform plastically under the effect of a predetermined violent shock to absorb a part of the energy involved in the shock.

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3,794,343

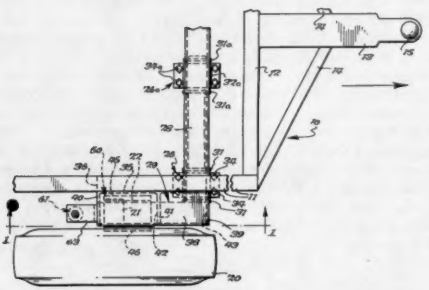
## INDEPENDENT WHEEL VEHICLE SPRING SUSPENSION

Albert F. Hickman, 8009 N. State Rd., Eden, N.Y. 14045

Continuation-in-part of Ser. No. 133,566, April 13, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,696

Int. Cl. B60g *11/22*; F16f *1/36*

U.S. Cl. 280—124 A 7 Claims



The vehicle suspension is a so-called independent wheel suspension, each wheel being journalled on a stub axle fixed to the free end of a straight arm extending lengthwise of the line of travel and the other end of which is fixed to a transverse hub structure journalled in spaced frame bearings. This arm is very short, the axis of the hub structure intersecting the wheel so that that portion of each arm between the axes of each wheel and its hub structure is shorter than the radius of the wheel. Resilient support for the frame on its arms is in the form of at least one elastomeric rubber body above each arm. Telescopic shock absorbers are severally between the free ends of their arms and their frame brackets so that they have a long action and can be of light weight, inexpensive construction.

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3,794,344

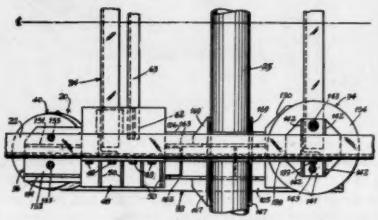
## VEHICLE AIR SUSPENSION ASSEMBLY

John E. Raidel, Rt. 9, Box 400-M, Springfield, Mo. 65804

Filed July 10, 1972, Ser. No. 270,253

Int. Cl. B60g *11/28*

U.S. Cl. 280—124 F 20 Claims



A vehicle air suspension assembly comprising a first beam, a first air spring mounted between the forward end of the first beam and the vehicle chassis, and a second air spring mounted between the rearward end of the first beam and the vehicle chassis. The assembly also includes a second beam, means for pivotally supporting the forward end of the second beam from the vehicle chassis near the first air spring, and means for pivotally supporting the rearward end of the second beam near the rearward end of the first beam. The vehicle axle is mounted to the first beam, whereby the first beam, and hence the vehicle axle, totally support the vehicle chassis on the air springs, the second beam acting to push and pull the vehicle axle and stabilize the assembly.

Inherent in the assembly design are means for retracting the vehicle axle and means for allowing for oscillation of the axle as caused by one end of the axle moving up or down relative to the other under various load and road conditions.

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3,794,345

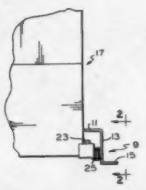
## ADJUSTABLY MOUNTED CAMPER STEP ASSEMBLY

Oscar Vernon Locke, 913 Evans St., Milton-Freewater, Oreg. 97862

Filed June 8, 1972, Ser. No. 261,095

Int. Cl. B60n *3/02*

U.S. Cl. 280—163 6 Claims



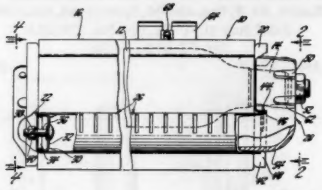
A camper step having dual function mounting means so that it can be mounted on a mounting bar selectively in either of several horizontally displaced positions or various vertical positions. The bar has mounting means so that it can be mounted in a left hand projecting position for left hand doors, or a right hand projecting position for right hand doors. The two mounting means are so related as to permit center mounting of the step member.

3,794,346

## OCCUPANT RESTRAINT SYSTEM

Henry J. Brockman, Warren, and Lawrence A. Gloomis, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 5, 1972, Ser. No. 250,673
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 3 Claims



An occupant restraint system includes a gas generator and a reaction plate assembly located in generally parallel relationship. The reaction plate assembly includes an elongated U-shaped member having spaced end plates, one being provided with a U-shaped flanged slot or opening. An elongated diffuser between the end plates with one open end thereof terminating within the flanged opening of the one end plate. The other closed end of the diffuser is bolted to the other end plate. The open end of the diffuser includes a generally T-shaped radially extending tab having the shank thereof received within a slot of the flange of the opening to rotatably index the diffuser with respect to the reaction plate assembly. A manifold connects to the outlet end of the gas generator and includes a tapered neck received within the open end of the diffuser. The manifold is bolted to the one end plate.

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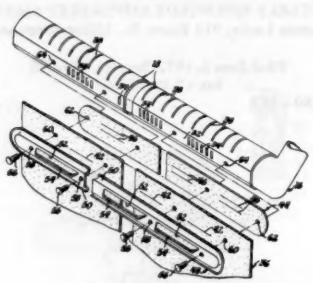
3,794,347

## OCCUPANT RESTRAINT SYSTEM

John F. Zens, Algonac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1972, Ser. No. 254,698
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 11 Claims



An occupant restraint system includes an inflator which communicates with a manifold. The manifold communicates with one open end of a generally elongated hollow cylindrical diffuser. The diffuser extends between the end plates of a reaction plate assembly and the other closed end of the diffuser is secured to one of the end plates. The diffuser includes two axially extending diametrically opposite flats and two radially spaced rows of slots, one row being in one flat and being divided into spaced groups, and the other row being between the flats. A torso cushion surrounds the diffuser and is fed from the other row of slots. A knee cushion fits within the torso cushion and has slits which are indexed in a predetermined position transversley of respective groups of slots. A planar seal covers the one row of slots and has spaced pairs of slits. The number of pairs is equal to the number of groups of slots. The seal is indexed to the diffuser, but regardless of which side of the seal covers the one row, at least one of the slits of each pair traverses a respective group of diffuser slots and is aligned with a respective cushion slit. An elongated retainer plate within the knee cushion includes louvered openings equal in number to the groups of slots. Fixed studs extending from the plate, one to each side of each such opening, extend through respective aligned openings in the cushion, seal, and diffuser to index the cushion and seal slits to each other and to the groups of respective slots of the diffuser. The studs are threaded to tapped posts which extend through openings in the other flat of the diffuser and engage the inside of the one flat to prevent deformation of the diffuser when the studs are secured to the posts. The openings in the diffuser are irregularly spaced to ensure that the bracket can be installed only one way and that the louvers of the bracket are correctly positioned with respect to the cushion slits. The posts in the diffuser act as baffles and create turbulence in the flow of pressure fluid through the diffuser.

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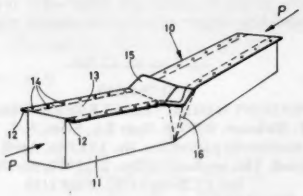
3,794,348

## AUTOMOTIVE VEHICLE FRAMES

Hans Karl Wilhelm Fischer, Strinz-Margaretha, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1972, Ser. No. 286,193
Claims priority, application Germany, Sept. 27, 1971, 2148108
Int. Cl. B62d 21/00
U.S. Cl. 280—106 4 Claims




An automotive vehicle frame comprising hollow longitudinal members including a forward region, a rear region, and a central region, each of said forward and rear regions having weakened areas providing lower compressive stiffness compared with that of the central region. The hollow longitudinal members may be formed from U-section channel with a cover plate secured (as by welding) to the channel to cover the open side thereof, and the weakened areas are provided by interruptions in the securement of the plate to the channel. The frame member may alternatively be formed by assembling plates together to form a hollow box-like structure. The cover plate or plates may be shaped at the weakened areas to ensure a buckling of the frame member under impact in a preferred direction.

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3,794,349

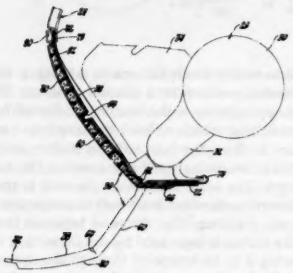
## OCCUPANT RESTRAINT SYSTEM

Frederick S. Fuller, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 19, 1972, Ser. No. 255,028
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 4 Claims

An occupant restraint system for a vehicle body includes an inflatable cushion mounted within the instrument panel and deployable through an opening of the panel when inflated

from a source of pressure fluid. A cover for the opening of the instrument panel includes inner and outer members of plastic material having their edge portions secured to each other to provide an envelope. The inner member is shaped to provide a pair of spaced generally parallel vertical grooves which are bonded to the outer member and define the rupturable or severable side edges of an integral flap. The inner member is further shaped to provide a pair of spaced generally parallel horizontal grooves which extend toward the outer member. One groove connects the vertical grooves intermediate the ends thereof and the other connects the vertical grooves at the lower ends thereof. The space between the inner and outer members is filled with foam material and a reinforcing plate is



provided between the members in the area to each side of the vertical grooves and below the other horizontal groove. The one horizontal groove, the juxtaposed portion of the outer member and the foam therebetween provide a first horizontal hinge dividing the flap into two interconnected portions. The other horizontal groove, the juxtaposed portion of the outer member and the foam therebetween provide a second horizontal hinge connecting the flap to the remainder of the cover. When the cushion deploys, the flap is severed along the side edge portions thereof and swings outwardly about the second horizontal hinge. When the flap engages the knees of the seated occupant it folds relative to itself about the first horizontal hinge.

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**3,794,350**

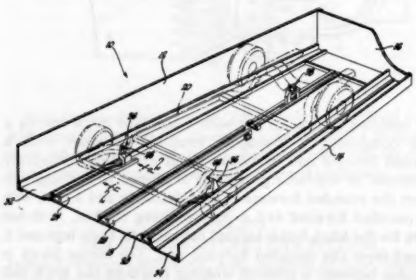
**DEVICE FOR SECURING VEHICLE TO TRANSPORTER**

**Walter Cwycyshyn, Detroit; Anthony Buccellato, Harper Woods, and Henry C. Hoffman, Lansing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Filed Dec. 1, 1972, Ser. No. 311,400**

**Int. Cl. B60p** *7/08*

**U.S. Cl. 280—179 R** **2 Claims**



A tie-down device for connecting a vehicle frame to a guide rail carried by a transporter and having a body portion which is formed at its upper end with a horizontal mounting member that is adapted to be received by an aperture in the side of the frame. The lower of the tie-down device has a shoe member with laterally spaced outwardly extending arms which are adapted to be received by the guide rail.

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**3,794,351**

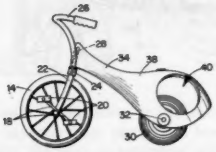
**VELOCIPEDE**

**Patrick Cudmore, 9 Fallon St., Cambridge, Mass. 02138**

**Filed Apr. 24, 1972, Ser. No. 246,727**

**Int. Cl. B62k** *17/00*

**U.S. Cl. 280—204** **9 Claims**



A velocipede having a tractor unit and a detachable semi-trailer unit. The tractor unit includes a front wheel, cranks and foot pedals to drive the front wheel, and a fork and a handlebar to steer the front wheel. The semi-trailer includes a very wide single rear wheel which is shaped like a bulging barrel, and a molded plastic frame which supports the rear wheel and detachably engages the tractor unit fork. The frame has an integral seat formed thereon.

The velocipede is self-stabilizing because its center of gravity (including the rider) is located substantially below the rotational axis of a cone formed in part by the curvature of the rear wheel tread. Therefore, the velocipede is stable like a tricycle at rest and handles like a bicycle when ridden. Furthermore, additional trailer units can be coupled together to form a train behind a single tractor unit.

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**3,794,352**

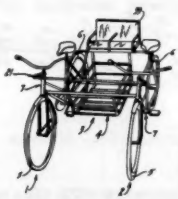
**FRAME ASSEMBLAGE FOR BICYCLES CONNECTED IN PARALLEL**

**Lester Popp, 12111 W. Good Hope Rd., Milwaukee, Wis. 53224**

**Filed Aug. 18, 1971, Ser. No. 172,753**

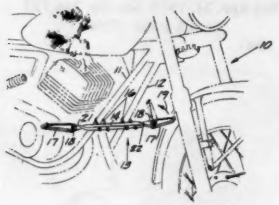
**Int. Cl. B62k** *13/06*

**U.S. Cl. 280—209** **12 Claims**



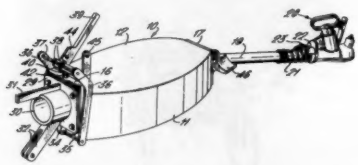
The disclosure provides for a frame assemblage for connecting or coupling a pair of bicycles in side-by-side or parallel relation. The frame assemblage includes carrier means rigidly connected between the several transversely extending frame elements of the assemblage.

3,794,353
FOOT REST FOR ROAD VEHICLE
John L. Oliver, 8846 Alondra Blvd., Bellflower, Calif. 90706
Filed Aug. 18, 1972, Ser. No. 281,872
Int. Cl. B62j 25/00
U.S. Cl. 280—291 1 Claim



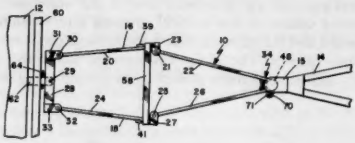
A foot rest for a road vehicle, for example, a motorcycle, is disclosed that is in the form of a square steel bar having the ends twisted 135°. The twisted sections are spaced from their respective ends, leaving a center portion untwisted, as well as the two end portions. To attach the bar to the motorbike, the center portion has formed two axially spaced slots having their openings on opposite sides of the square bar so that U-clamps around the motorcycle frame bars can engage the slots. The end portions each have a bolt hole extending between opposite sides. One bolt hole is disposed 90° to the other, to allow the bar to be formed by twisting it 270° in one operation, so that the bolt holes are aligned and are disposed at 45° to the slots. Pivotable foot pedals are bolted to the bolt holes, and the foot pedals can be pivoted to a vertical position out of the way when not in use.

3,794,354
COUPLING FOR CARAVANS AND TRAILERS
Leslie Everingham, New South Wales, Australia, assignor to Alexander Papp, Tweed Heads, New South Wales, Australia, a part interest
Filed Aug. 8, 1972, Ser. No. 278,822
Claims priority, application Australia, Aug. 10, 1971, 5850/71
Int. Cl. B60d 1/04
U.S. Cl. 280—478 R 2 Claims



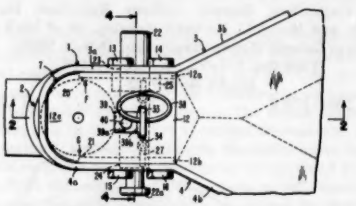
A coupling for a caravan or trailer has a body for mounting on the caravan or trailer tow-bar, and a shaft, with a coupling socket at its front, slidable through the ball of a ball and socket joint in the front of the body, so the shaft may be extended, until stopped by an enlarged rear-end piece, or retracted. The body is shaped so that when the shaft is extended, its coupling socket may be swung to either side or up or down, and when the shaft is retracted the rear-end piece is guided to, and releasably engaged by, a lock.

3,794,355
EXPANSION TRAILER HITCH
William N. Cracolice, 1832 Galveston, San Diego, Calif. 92110
Filed Oct. 1, 1971, Ser. No. 185,702
Int. Cl. B60d 1/00
U.S. Cl. 280—482 11 Claims



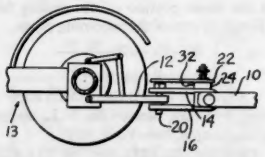
An expansion trailer hitch for use in towing a vehicle at either an extended position or a normal position. The hitch has particular applicability to the launching of small boats and enables the launching vehicle to back the boat into a sufficient depth of water to float the boat off the trailer, without the launching vehicle becoming itself immersed in the water to a significant depth. The hitch is normally secured to the towing vehicle and mounts a standard hitch ball to cooperate with the hitch tongue on a trailer. The distance between the towing vehicle and the trailer is increased by disconnecting the hitch ball and allowing it to be extended through the use of expansion links attached to the towed vehicle at one end thereof and to the hitch ball mount at the other end. The expansion links comprise elongated members hinged at the mid-point of the expansion links. They are maintained in their expanded condition by an expansion lock comprising expansion bars connecting the two elongated members or a tie bar connecting adjacent expansion links. A caster is provided under the hitch ball to support the trailer and provide better tracking.

3,794,356
COUPLING DEVICE FOR USE WITH A BALL-TYPE HITCH
Russell E. Hollis, Jr., 502 Merrick Dr., Xenia, Ohio 45385
Filed Oct. 26, 1971, Ser. No. 192,504
Int. Cl. B60d 1/06
U.S. Cl. 280—513 19 Claims



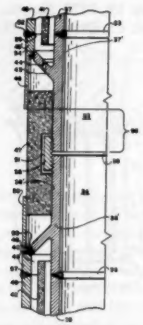
A coupling device for use with a ball-type hitch having a body comprising a U-shaped, strap-like member with a rounded forward end and spaced legs extending rearwardly therefrom. A reinforcing member is affixed to the legs adjacent the rounded forward end of the body and forms with the rounded forward end a ball-receiving pocket. A thrust block for the hitch ball is located between the body legs and is spaced from the rounded forward end. The thrust block is shiftable between a position wherein it retains the hitch ball within the pocket and a position wherein it will release the hitch ball from the pocket. Means are provided to lock the thrust block in its ball-retaining position. The free ends of the legs of the U-shaped body may be affixed in any suitable manner to any conventional trailer or vehicle frame means.

3,794,357
**HITCH DEVICE**
Howard S. Frye, R.D. No. 1, Ligonier, Pa. 15658
Filed May 3, 1972, Ser. No. 249,797
Int. Cl. B60d 1/06
U.S. Cl. 280—515 5 Claims




A hitch device for connecting an implement or a wagon or the like to the draw bar of a draft implement such as a tractor in which the hitch device comprises upper and lower plates connected to the drawn device and adapted to receive the draw bar therebetween and having apertures to receive a pin or bolt which also passes through an aperture in the draw bar. A lock bar is pivotally mounted on the upper plate and has a first latched position where it overlies the pin and prevents disengagement thereof from the apertures and a second position wherein the bar exposes the apertures for insertion and removal of the pin.

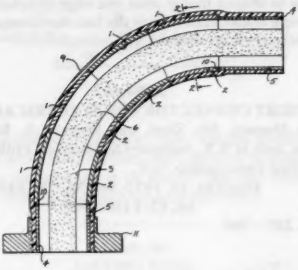
3,794,358
**WELL PRODUCTION**
William G. Allen; James A. LeVelle, and Frank J. Schuh, all of Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Division of Ser. No. 241,131, April 5, 1972, Pat. No. 3,720,267, Division of Ser. No. 77,647, Sept. 2, 1970, Pat. No. 3,680,631. This application Sept. 21, 1972, Ser. No. 290,897
Int. Cl. F16l 59/14
U.S. Cl. 285—47 4 Claims



A method and apparatus for producing a warm fluid from a well through casing, the casing passing through a permafrost zone, wherein the permafrost is insulated from melting by the combined use of vacuum and solid thermal insulation.

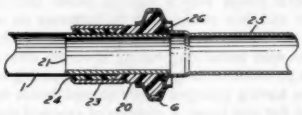
3,794,359
**ABRASION RESISTANT PIPE FITTING**
James T. Fisher, Little Rock, Ark., assignor to A. O. Smith-Inland Inc., Milwaukee, Wis.
Filed Oct. 30, 1972, Ser. No. 301,892
Int. Cl. F16l 9/14
U.S. Cl. 285—55 5 Claims

A tubular pipe fitting adapted to withstand abrasive and corrosive attack in changing the direction of fluid flowing therein. The fitting is made of a plurality of wear plates of ceramic material molded or cast to a semi-circular shape and assembled in circumferentially spaced opposed relationship in the area of the fitting subject to attack. Grout consisting of a mixture of epoxy resin and metallized ceramic pellets is



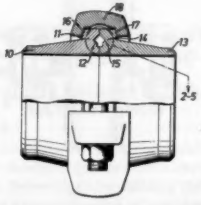
disposed in semi-circular form in the circumferential space between the opposed wear plates and longitudinally of the fitting fiber glass filaments impregnated with resin which surround the wear plates and grout, and the entire assembly is cured to present a completed fitting.

3,794,360
**EXTERNAL SWAGE END FITTING**
Wilfred H. Bachle, Long Beach; Gilbert Segovia, Santa Ana, and H. Andre Parker-Jones, Newport Beach, all of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.
Filed Nov. 1, 1971, Ser. No. 194,123
Int. Cl. F16l 33/20
U.S. Cl. 285—256 1 Claim




This invention describes a unique externally swaged end fitting for a single or multi-layer, braid-covered cast membrane tube of the type used in fluid filtration systems. It can be used as a coupling between dissimilar tubing or two tubes of like characteristics.

3,794,361
**PIPE COUPLINGS**
Alvar Torsten Westberg, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Oct. 4, 1971, Ser. No. 186,153
Claims priority, application Sweden, Oct. 13, 1970, 13814/70
Int. Cl. F16l 23/00
U.S. Cl. 285—336 2 Claims




The pipe coupling of the invention is characterized in that the channel, formed by opposed grooves provided on opposed

faces of flanges on the ends of two pieces of pipe to be coupled, is composed of at least one essentially triangular groove in the contact face of each of the flanges; in addition, the channel has at least one radially directed groove whose cross-sectional area is essentially rectangular or trapezoidal. The groove is so shaped that at least one edge directed towards the sealing ring is formed between the last-mentioned groove and the other part of the channel.

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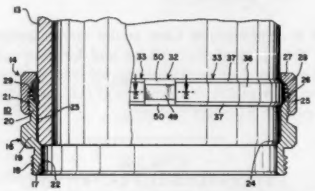
**3,794,362**

## RAINTIGHT CONNECTOR FOR ELECTRICAL CONDUIT

**Thomas Mooney, Mt. Sinai, and Richard A. Bauer, Mastic Beach, both of N.Y., assignors to Electrical Fittings Corporation, East Farmingdale, N.Y.**

**Filed Oct. 16, 1972, Ser. No. 297,656**
**Int. Cl. F16l** *19/08*
**U.S. Cl. 285—340** **11 Claims**



A vapor-proof connector on a metal electric conduit includes an externally threaded tubular body engaging the end of the conduit and a gland nut spaced inwardly of an engaging the tubular body. The gland nut has an inwardly directed peripheral flange with a tapered inside face confronting a tapered end face of the body to delineate an annular space which surrounds the conduit and houses a channel-shaped resilient split metal ring having inwardly directed diverging flanges provided at its split ends with opposing reduced width tongues having enlarged arrow-shaped heads terminating in vertical flat end faces. A coupler of external shape similar to but thicker than that of the split ring has a rectangular longitudinal bore interrupted by a transverse wall. The tongues engage the bore and the tightening of the gland nut compresses the ring to urge the end faces of the ring and head into sealing engagement with the coupler end faces.

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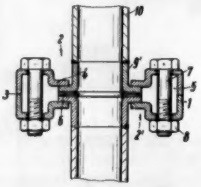
**3,794,363**

## FLANGE

**Wilhelm Schulz, Kuhleshuette 83, 415, Krefeld, Germany**

**Filed June 10, 1971, Ser. No. 151,771**
**Claims priority, application Germany, Dec. 3, 1970, 2059486**
**Int. Cl. F16l** *19/00*
**U.S. Cl. 285—363** **5 Claims**



A pipe flange adapted to be welded to a section of pipe to effect a seal between two adjoining pipes. The flange includes an annular disc with an inner and outer wall depending therefrom to form an annular trough. The trough walls are deformed outwardly when a fastening bolt passing through the disc is tightened to compress the flange against an abutting member which may be an identical flange in oppositely facing relation. A sealing face extends from the inner wall parallel to the annular disc and is adapted to engage a seal or in one embodiment a pipe flange. A small pipe section may extend upwardly from the inner portion of the sealing face to permit welding the flange to one of the adjoining pipes.

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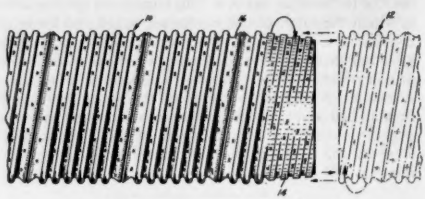
**3,794,364**

## CONDUIT END CONNECTION

**Frank Thomas Williams, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.**

**Filed Dec. 27, 1971, Ser. No. 212,402**
**Int. Cl. F16l** *15/00*
**U.S. Cl. 285—390** **1 Claim**



A method of reforming one end of a length of helically corrugated sheet metal conduit by providing a tapered crimp so that said end is adapted to be lockingly received into an unreformed end of another length of like conduit for establishing an axial connection therebetween.

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**3,794,365**

## INSIDE EMERGENCY EXIT LATCH

**Michael P. Richberg, 1120 S.W. 74th Ave., Miami, Fla. 33144**

**Filed Oct. 19, 1972, Ser. No. 299,006**
**Int. Cl. E05c** *5/02, 19/10*
**U.S. Cl. 292—62** **14 Claims**

A latching means, normally holding iron grille coverings for windows and doors in a covering relation thereto and providing inside release means and co-operating spring means whereby a single, simple manipulation by a person within a structure will simultaneously unlatch the covering grille and swing it to an open condition.

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**3,794,366**

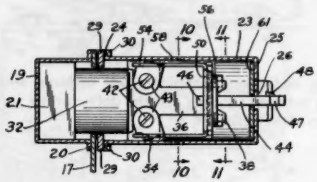
## MAGNETIC LATCH AND LOCK

**Percy R. Graham, 7342 24th Ave. N.W., Seattle, Wash. 98117**

**Continuation-in-part of Ser. No. 296,827, Oct. 12, 1972, abandoned. This application Dec. 11, 1972, Ser. No. 314,087**
**Int. Cl. E05c** *17/56, 19/16, 1/12*
**U.S. Cl. 292—251.5** **7 Claims**

This latch and lock means includes a magnetized bolt and a strike in which at least a part thereof is either magnetized and

of opposite polarity from the bolt or is of material magnetically attractable to the bolt. The bolt is movable in a bolt housing of magnetically attractable material. It is moved by magnetic attraction to a door locking position within the strike member when it is aligned with the same by closing of the door and is yieldingly held there by magnetic attraction. In addition pawl means is provided to positively secure the bolt against



retraction by picking methods using thin instruments inserted between the edge of the door and the jamb. Extensible pull back members, normally held contracted relative to each other by spring means, will first release the pawl means and then retract the bolt in response to a key or knob actuated pull. Magnetic attraction between the bolt and bolt housing will hold the bolt retracted when the door is open.

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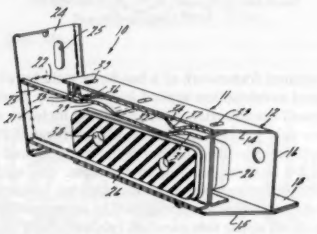
**3,794,367**

**ELASTOMERIC ENERGY ABSORBER**

**John M. Slessor, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed July 21, 1972, Ser. No. 273,881**
**Int. Cl. B60r** *19/06*
**U.S. Cl. 293—88** **7 Claims**



The energy absorbing support device comprises a ram attached to and particularly adapted to support the impact bar of a vehicle bumper system. The ram is telescopically received in an outer casing adapted to be supported on a vehicle frame member. Elastomeric puck members bonded to the case and ram yieldably position the ram within the case. A wedge plate is welded internally to the case and has wedging engagement with the ram to prevent withdrawal of the latter from the case and vibration within the case. The energy of an impact on the bumper or impact bar is transmitted through the ram to the puck members and is absorbed or controlled by the elongation (stretch) of the pucks.

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**3,794,368**

**IMPLEMENTS FOR HOLDING AND TURNING COMESTIBLES**

**John Majeske, 2835 Garrett Rd., Drexel Hill, Pa. 19026**

**Continuation of Ser. No. 88,660, Nov. 12, 1970, abandoned.**
**This application May 3, 1972, Ser. No. 250,025**
**Int. Cl. A47g** *21/00*
**U.S. Cl. 294—5** **1 Claim**

There is disclosed an implement for holding and turning a comestible, such as an ear of corn, adapted to be manipulated by hand, having a ridged hand-grip member, from the inner end of which extends a rigid rod member, formed, progressively, with a sharp point, a tapered portion, and a screw portion, and, inboard of the screw portion, a shank which is interlocked with the handle member, but a portion of which shank is preferably exposed so as to extend into the core of the comestible when the implement is screwed home.

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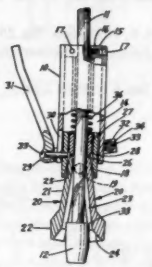
**3,794,369**

**LIFTING TOOL**

**Karl J. Hnatko, Hibbing, Minn., assignor to Taconite Engineering & Manufacturing Co., Hibbing, Minn.**

**Filed Oct. 2, 1972, Ser. No. 294,492**
**Int. Cl. B66c** *1/56*
**U.S. Cl. 294—96** **12 Claims**



A tool for lifting objects having an opening into which the tool may be inserted and its jaws expanded to grip the article. Although especially adapted to facilitate moving liner segments of rod and ball mills, the tool is adapted to lifting other articles having holes or other openings into which the tool may be inserted, such as pipe, drill rod, etc. The tool is characterized by an easily insertable tip associated with manual squeeze operated positive jaw contraction for ease of insertion in openings, spring assistance to expand the jaws into gripping position and eye means for crank hook-up to permit the load to actuate the jaws for positive gripping as the article is lifted. While the article being lifted is in transit, the lifter operating handle is inoperative and cannot release.

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**3,794,370**

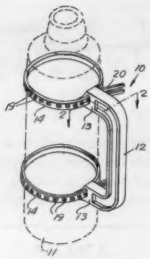
**HANDLE FOR THERMOS BOTTLE**

**Bill E. Lockhart, and Solomon P. Scholl, both of 5509 N. 10th St., Phoenix, Ariz. 85014**

**Filed Apr. 28, 1972, Ser. No. 248,600**
**Int. Cl. A47j** *49/00*
**U.S. Cl. 294—31.2** **4 Claims**

A one piece plastic handle for attachment to thermos bottles including two strapped pieces which encircle the thermos bottle and can be drawn tight by utilizing the elasticity of the plastic. The straps have a plurality of attaching apertures of a generally rectangular configuration and the body of the handle has a serpentine passage with generally rectangular teeth formed centrally thereof. The strap is fed through the serpen-

tine passage and pulled taut with a portion of the apertures engaged over the teeth. The teeth each have a sloping face in the



direction from which the strap is moving when being tightened with the opposite face perpendicular to prevent withdrawal of the strap.

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**3,794,371**

**DRUM GRIPPER**

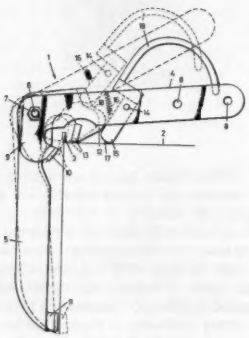
**Johannes Arbouw, Marnixstraat 32-34, Rotterdam, Netherlands**

**Filed Oct. 6, 1972, Ser. No. 295,447**

**Claims priority, application Netherlands, Oct. 8, 1971, 7113835**

**Int. Cl. B66c** *1/66*

**U.S. Cl. 294—90** **5 Claims**



A grip to be applied to the chime of a drum for the latter to be hoisted in upright position is provided with means which automatically locks the two arms of the grip in a pre-determined angular position.

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**3,794,372**

**MEANS FOR DECREASING TRAILER DRAG**

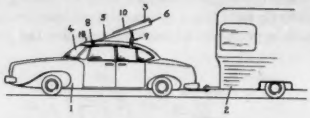
**William Webb, R.R. 7, Guelph, Ontario, Canada**

**Filed Sept. 28, 1972, Ser. No. 295,359**

**Int. Cl. B62d** *35/00*

**U.S. Cl. 296—1 S** **9 Claims**

An air deflector is mounted on the roof of a towing vehicle to deflect air upwardly and sideways relative to a trailer, thereby decreasing the drag of the trailer. The air deflector inclines rearwardly and upwardly from a front edge which rests sealingly on the roof of the towing vehicle as close as possible to the top of the windshield, the deflector widening



rearwardly and having depending side surfaces, with means extending between the roof and the deflector for varying the inclination of the deflector.

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**3,794,373**

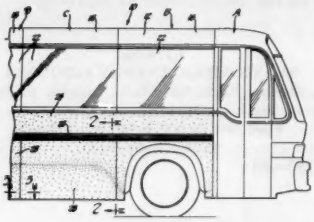
**BUS SIDE PANEL**

**Donald L. Manning, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed May 30, 1972, Ser. No. 257,759**

**Int. Cl. B62d** *31/04*

**U.S. Cl. 296—28 A** **2 Claims**



The structural framework of a bus body includes carlines of tubular steel construction spaced longitudinally thereof. The outer sidewall construction of the bus body includes a plurality of lower side panels. The lower edge portion of each side panel is attached to the carlines in laterally spaced relation therefrom by resilient links of tire carcass. The upper edge portion of the lower side panel includes an inwardly offset continuous flange which is juxtaposed to an outwardly extending flange on an upper side panel. A rubber rubrail attached to the upper side panel includes a downwardly extending portion having a groove in which an insert may be installed to spread the lower portion downwardly and inwardly to hold the inwardly offset flange of the lower panel against the outwardly extending flange of the upper panel and thereby attach the lower side panel to the body. When the lower side panel is impacted it pivots about its upper edge portion as permitted by yielding of the rubber rubrail as its lower side portion is moved inwardly toward the carlines as the resilient links yield.

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**3,794,374**

**TRANSIT VEHICLE BODY MODULE**

**Donald Lee Manning, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.**

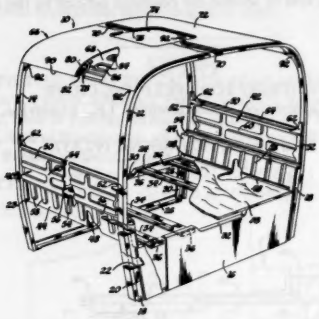
**Filed June 5, 1972, Ser. No. 259,599**

**Int. Cl. B62d** *31/02*

**U.S. Cl. 296—28 A** **3 Claims**

A body module for a transit vehicle includes a pair of U-shaped carlines which open downwardly. The legs of each are interconnected transversely extending bulkhead structures. The carlines are connected in longitudinally spaced relation by side-wall structures including upper and lower side panels extending between the longitudinally aligned legs of the carlines. The carlines are joined at their upper portions by a roof

structure including inner and outer roof panels extending therebetween and welded thereto. The floor of the passenger compartment is mounted on supports extending between the upper edges of the bulkhead structures. A plurality of the body modules are aligned longitudinally and welded end to end to provide the transit vehicle body. The sidewall structures and the roof structure provide the integral longitudinal stress sustaining frame structure of the vehicle. The sidewall structures are located above the floor line of the passenger compartment and accordingly do not obstruct the space beneath the passenger compartment floor which is used for the storage of passenger luggage, fuel tanks and electric storage batteries.



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**3,794,375**

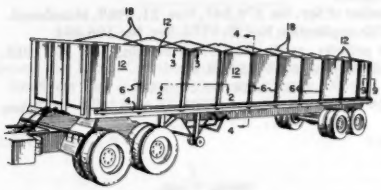
**DETACHABLE VEHICLE ENCLOSURE**

**Ernest F. Woodward, 11 Circle Drive, Camp Hill, Pa.**

**Filed Oct. 4, 1971, Ser. No. 186,051**

**Int. Cl. B62d** *27/06, 33/04*

**U.S. Cl. 296—36** **7 Claims**



A load carrying vehicle such as a flat-car, flat-bed trailer or truck having no sides but which have stake pockets, can be converted to a side enclosed platform by utilizing stakes having panel edge retaining brackets thereon, in which panels can be slidably inserted in order to build up walls of any desired length. The panels may be assembled or removed one at a time in random order by one person without tools.

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**3,794,376**

**MOTOR VEHICLE, ESPECIALLY PASSENGER MOTOR VEHICLE**

**Bela Barenyi, Silcherstr. 25, Maichingen, and Heinrich Haselmann, Brunnenweisenstr. 17, Sindelfingen, both of Germany**

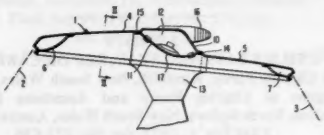
**Filed Oct. 20, 1971, Ser. No. 190,828**

**Claims priority, application Germany, Oct. 20, 1970, P 20 51 373.9**

**Int. Cl. B62d** *25/06*

**U.S. Cl. 296—137 R** **28 Claims**

A motor vehicle, particularly a passenger motor vehicle, with a roof surface offset in the vehicle longitudinal direction, which is composed of at least two sheet metal panels connected with each other at their respective ends; these ends are also provided with transversely extending bent portions, offsets, shoulders or the like so that a transversely extending bearer is formed thereby.



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**3,794,377**

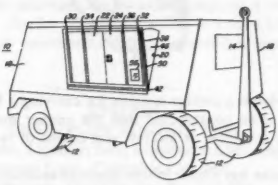
**COMPRESSOR ENCLOSURE**

**Erich A. Wachsmuth, 1810 Ridgemoor Dr., Long Beach, and Charles F. Goede, R.R. No. 4, Michigan City, both of Ind. 46360**

**Filed June 5, 1972, Ser. No. 259,955**

**Int. Cl. B60j** *5/04*

**U.S. Cl. 296—146** **8 Claims**



Compressor enclosure door arrangement whereby the doors are maintained closed to attentuate operating noise while the entire door configuration is hingedly opened with the uppermost portion forming a ventilation space with a minimum of noise transmission and also including selectively opened end panels for providing additional ventilation or additional noise dampening as desired.

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**3,794,378**

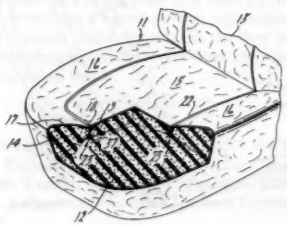
**SEAT ASSEMBLY**

**Harry Haslam, Detroit; Giulio Massetti, and Herbert W. Truesdale, both of Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Nov. 24, 1972, Ser. No. 309,573**

**Int. Cl. A47c** *27/00*

**U.S. Cl. 297—219** **5 Claims**



A seat assembly in which the improvement comprises an elastomeric cushion having at least one elongated groove of sustantial depth extending across its surface. An elongated

anchor means is moulded into the cushion contiguous to the bottom of the groove and is adapted to receive in retention engagement a retention member secured to a cushion cover, thereby securely retaining the cover over the cushion.

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3,794,379

## CHILD'S BASSINET, SEAT, BED OR CARRIER

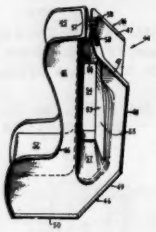
**Dillon Charles Furey, Kirribilli, New South Wales, Australia, assignor to Charles Furey and Associates Proprietary Limited, North Sydney, New South Wales, Australia**

**Filed Feb. 1, 1972, Ser. No. 222,530**

**Claims priority, application Australia, Feb. 8, 1971, 3955/71**

**Int. Cl. A47d *1/10***

**U.S. Cl. 297—250** **1 Claim**



The device is a carrier suitable for carrying a baby or small child and is so constructed that the carrier may be readily secured to a vehicle or aircraft seat in one of two alternative positions.

The carrier has a base in four sections secured together end to end, there being an outer and an inner foot section and an outer and an inner head section. Each section may be flat or may comprise at least two similar parallel runners. The base sections are angularly disposed to each other at their junctions so that when the inner foot section is on the seat, the outer head section is against the seat back and when the outer foot section is on the seat the inner head section is against the seat back.

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3,794,380

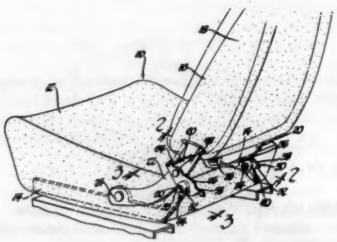
## SEAT BACK ANGLE ADJUSTER AND LATCH

**Edward H. Mertz, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed June 15, 1972, Ser. No. 262,953**

**Int. Cl. B60n *1/02*; A47c *3/00***

**U.S. Cl. 297—379** **2 Claims**



A seat back angle adjuster and latch for a vehicle seat including a seat back having laterally spaced inboard and outboard support arms pivotally supporting the seat back for movement between use and easy enter positions. The seat back angle adjuster includes a two-position lever operated cam which is pivotally mounted on the seat frame and engages the inboard support arm to selectively define first and second angular use positions of the seat back relative the vertical. A seat back latch lever pivotally mounted on the outboard support arm has a pair of spaced recesses selectively engaging a pin extending from the seat frame to lock the seat back in either of the first or second use positions defined by the angle adjuster.

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3,794,381

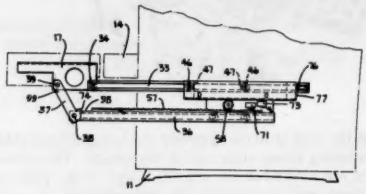
## FOOTREST FOR RECLINING CHAIR

**Daniel F. Caldemeyer, 4300 Jennings Ln., Evansville, Ind. 47712**

**Filed Oct. 26, 1971, Ser. No. 192,537**

**Int. Cl. A47c *7/50***

**U.S. Cl. 297—430** **2 Claims**



Footrest assemblies include motorized slides extendable from the front of the chair to elevate and incline a footrest under fingertip electric control by the occupant. A slide for footrest extension is also shown. A footrest and seat assembly is mountable to an arm frame as a unit.

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3,794,382

## SUPPORT SYSTEMS FOR THE SEATED HUMAN BODY

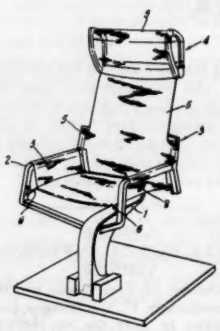
**Jack Bloomfield; Paul Branton, and Kenneth Grange, all of London, England, assignors to British Railways Board, London, England**

**Continuation of Ser. No. 878,849, Nov. 21, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,484**

**Claims priority, application Great Britain, Nov. 27, 1968, 56,324/68; July 16, 1969, 35,924/69**

**Int. Cl. A47c *7/02*, *1/08***

**U.S. Cl. 297—457** **7 Claims**



A support system for the seated human body comprising a two-dimensional material such as a length of netting constrained under tension to define a three-dimensional support form including in an upwardly extending length of the material

a localised forwardly projecting support portion for the upper pelvic/lumbar area of the human body, the tension in the forwardly projecting support portion being preferably higher than in the remainder of the upwardly extending length of the material. In a generally horizontally extending seat portion the tension in a zone immediately forward of the ischial tuberosities supporting zone is preferably higher than the tension in the ischial tuberosities supporting zone itself.

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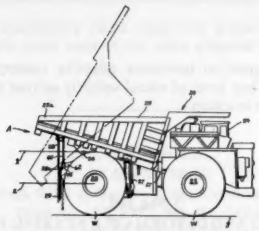
**3,794,383**

## TILTING DUMP TRUCK MUD FLAP ASSEMBLY

**Jimmie J. France, Roanoke; Fred J. Neubert; Eugene L. Caldwell, both of Peoria; Howard D. Springer, and Max E. Sutton, both of Washington, all of Ill., assignors to Westinghouse Air Brake Company, Peoria, Ill.**

**Filed May 24, 1972, Ser. No. 256,603**
**Int. Cl. B60p** *1/16;* **B62d** *25/18;* **B65g** *67/24*
**U.S. Cl. 298—1 SG** **10 Claims**



A mud flap assembly for a dump truck or the like having: an upper flap mounted to the dump box; and a lower flap carried by a support element which is suspended by flexible members from the dump box and is connected to the vehicle frame by a pair of spaced rockable members carrying stops for limiting the downward movement of said support element, and hence the lower flap, when the dump box is raised for unloading.

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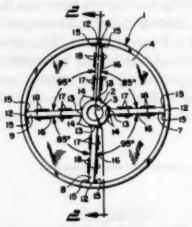
**3,794,384**

## DISK WHEEL

**James E. Rice, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed May 17, 1972, Ser. No. 254,022**
**Int. Cl. B60b** *1/08, 19/00*
**U.S. Cl. 301—5 R** **13 Claims**



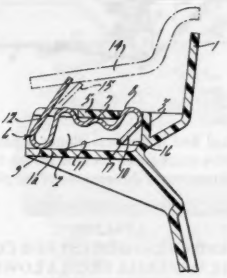
A rotatable disk wheel in which radially extending ribs are connected to the disk with the angles between a rib and adjacent ribs on either side of the rib being unequal to minimize undesirable vibrations resulting from the forces applied during rotation of the wheel.

**3,794,385**

## FASTENING ARRANGEMENT FOR DECORATIVE WHEEL RINGS

**Paul Kretschmer, Hohenstr. 18, Waldaschaff, Germany**

**Filed July 10, 1972, Ser. No. 270,222**
**Int. Cl. B60b** *7/06*
**U.S. Cl. 301—37 P** **3 Claims**



A plurality of axial clip-receiving recesses each having an axial ramp are provided on an axial flange of a decorative wheel ring. A clip for fastening the ring to a vehicle wheel is inserted in each recess and axially interlocked behind the end of each ramp.

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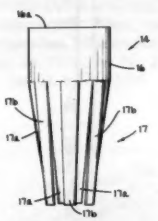
**3,794,386**

## GRAIN FLOW CONTROLLER

**Thomas W. Hite, Ligonier, Ind., assignor to LML Engineering & Manufacturing Corp., Columbia City, Ind.**

**Filed Apr. 11, 1973, Ser. No. 349,982**
**Int. Cl. B65g** *53/42*
**U.S. Cl. 302—60** **6 Claims**



Disclosed is a flow controlling device or nozzle which is adapted for attachment to a discharge spout delivering a turbulent fluid flow, such as the grain flow from a grain transport auger. The device has a barrel portion with extending, staggered stave portions which smooth out the flow of grain and which prevent clogging of the device when large quantities of grain are introduced into it.

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**3,794,387**

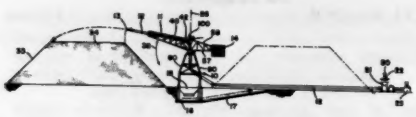
## APPARATUS FOR STORING A FLUENT MATERIAL

**Eduard F. Fischer, West Vancouver, B. C., Canada; Edwin Farnworth, Everett, and Elmer Christensen, Kirkland, both of Wash., assignors to The Black Clawson Company, Hamilton, Ohio**

**Division of Ser. No. 35,180, May 6, 1970, Pat. No. 3,661,283.**
**This application Apr. 10, 1972, Ser. No. 242,626**
**Int. Cl. B65g** *65/28*
**U.S. Cl. 302—10** **6 Claims**

Wood chips or other fluent materials are stored in an annularly shaped pile by means of a boom mounted, pneumatically

fed pipe. The boom is supported by a stationary tower, and the boom and pipe are provided with coincident pivotal and rotational joints which permit the boom and pipe assembly to be



driven in vertical and horizontal planes separately or simultaneously by drive mechanism located on the tower to control the annular and transverse dimensions of the pile.

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**3,794,388**

**METHOD AND ARRANGEMENT FOR CONVEYING PARTICULATE MATERIAL FROM A LOWER LEVEL TO AN UPPER LEVEL**

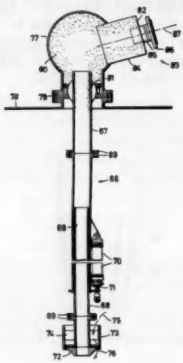
**Martin Westenberg, Klosterstrasse 34 502, Frechen, Germany**

**Filed Sept. 8, 1971, Ser. No. 178,655**

**Claims priority, application Germany, Sept. 14, 1970, P 20 45 317.2; Apr. 3, 1971, P 21 16 462.5**

**Int. Cl. B65g** *53/28, 53/42*

**U.S. Cl. 302—58** **5 Claims**



The grit used for blast-scouring the interior of a tank or compartment in a ship, accessible only through a manhole, is entrained and raised by suction off the floor of the tank by a small distance, and is thereupon entrained and conveyed to the level of a deck above the tank by pneumatic pressure.

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**3,794,389**

**ADAPTIVE BRAKING SYSTEM**

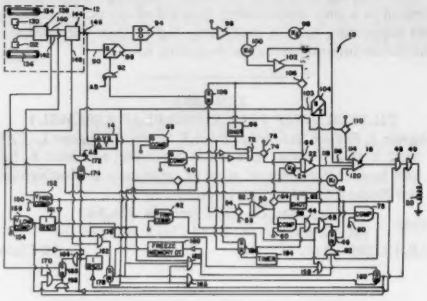
**Dennis J. Davis, and John E. Juhasz, both of Elyria, Ohio, assignors to The Bendix Corporation, Elyria, Ohio**

**Filed Dec. 21, 1972, Ser. No. 317,489**

**Int. Cl. B60t** *8/08*

**U.S. Cl. 303—21 P** **24 Claims**

An adaptive braking system for an automotive vehicle is disclosed. The system is adapted to simultaneously control both wheels mounted on a common axle by a single modulating device and control unit. The control unit is designed to compensate for differences in the rates of wheel rotation of the wheels controlled by the single unit, and is also provided with circuitry which selects the wheel speed signal from either the high speed wheel or the low speed wheel. Furthermore, the



system is designed to terminate adaptive control at some predetermined low level of wheel velocity so that the vehicle may be brought to a stop.

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**3,794,390**

**SLIDING AND DEFORMABLE BEARING FOR INSERTION BETWEEN BUILDING COMPONENTS**

**Fredy Kilcher, Wengisteinstrasse 9A 4500, Solothurn, Switzerland**

**Filed Nov. 9, 1971, Ser. No. 197,083**

**Claims priority, application Switzerland, Dec. 16, 1970, 18627/70**

**Int. Cl. F16c** *17/00*

**U.S. Cl. 308—3 R** **8 Claims**

A sliding and deformable bearing for insertion between building components liable to limited respective movement or creep, consisting of a flattened tube with loops at the ends of the flat part as seen in cross-section, means within the tube to facilitate relative sliding movement between the inner faces of the tube, and a flat deformable thickening of one wall of the tube to function as a bearing body. The dimensions of the parts are such that initial movement between the components is accommodated by sliding movement, and final limited movement, when one of the loops has been reduced in size, by deformation of the bearing body.

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**3,794,391**

**MAGNETIC ROTOR ASSEMBLY**

**Gregory Grosbard, 353 W. 19th St., New York, N.Y.**

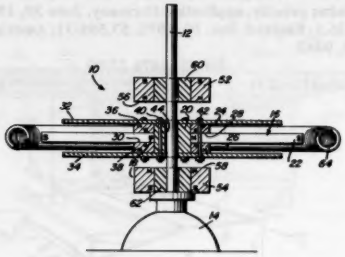
**Filed Sept. 15, 1972, Ser. No. 289,361**

**Int. Cl. F16c** *39/06*

**U.S. Cl. 308—10** **12 Claims**

A rotor assembly having a plurality of magnetic fields extending from radially projecting magnets, the fields being reinforced at the radially inner portion of the rotor by magnetic

discs between which the magnets are clamped to create relatively strong repelling forces for floating support of the rotor



between rotationally fixed, magnetic suspension members. The radially outer ends of the rotor magnets are of the same polarity.

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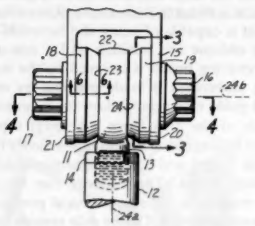
**3,794,392**
**BEARING SEAL**
**Gene W. Scott, 9103 E. Garvey Blvd., Rosemead, Calif. 91770**
**Filed Apr. 10, 1972, Ser. No. 242,407**
**Int. Cl. F16c** *33/74*
**U.S. Cl. 308—36.1** **4 Claims**



Labyrinth seals for rod-end swivel bearings having outer annular lips of a yieldable elastomer and inner annular lips of lesser height. The seals are mounted on metal plates which have parallel planar surfaces perpendicular to a central bore which accommodates standard rod-end attachment bolts, the planar surfaces react the tensile pre-load in the bolt and also pre-load and deflect the yieldable lips of the seals against the rod-end bearing housing to seal the swivel action against external contamination, and to retain grease or other lubricant in the swivel bearing area.

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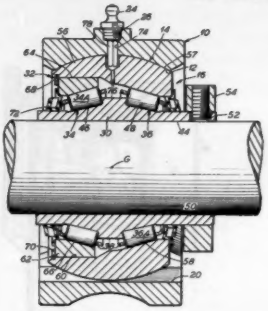
**3,794,393**
**ROLLER BEARING ASSEMBLY**
**Charles B. Hurd, Aurora; Gerald W. Richmond, Montgomery; Leo E. Richmond, and Earl F. Tidholm, both of Aurora, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.**
**Filed June 29, 1972, Ser. No. 267,306**
**Int. Cl. F16c** *33/00*
**U.S. Cl. 308—207** **7 Claims**

A housing with a self-aligning, sealed roller bearing, the bearing having an inner race and an outer race assembly with rollers therebetween. The bearing can be pre-lubricated and is capable of being re-lubricated. The outer race assembly has a continuous outer spherical surface mating with an interior spherical surface of the housing. The outer race assembly is of two pieces, one race being formed on a cylindrical member



received by the other piece having the continuous outer spherical surface. The cylindrical member is held in position by various means which enable the manufacture to supply the customer with any pre-loading required for a particular installation.

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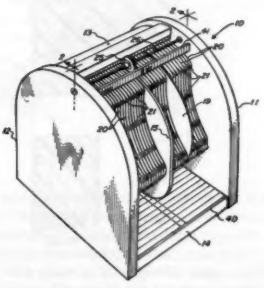
**3,794,394**
**RECORD STORAGE RACKS**
**Lloyd E. Berggren, Minneapolis, Minn., assignor to Technology Application Corporation, Minnetonka, Minn.**
**Filed Apr. 24, 1972, Ser. No. 246,742**
**Int. Cl. A47b** *81/06*
**U.S. Cl. 312—19** **8 Claims**



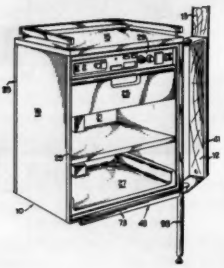
An improved record storage rack is provided having a plurality of compartments for holding a plurality of records in a vertical position, the storage rack including a rotatable mounted wheel for frictionally engaging the edge of the record in order to displace the record from the stack thus allowing the user to quickly and easily pull the record from the storage rack.

3,794,395

## CABINET

Frank J. Damico, Cincinnati, Ohio, and William H. Stein, Jr., Batesville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed May 1, 1972, Ser. No. 249,225
Int. Cl. A47b *81/00*
U.S. Cl. 312—209 4 Claims



A cabinet suitable for hospital room use including a pivotally connected support bracket adapted to support the cabinet in spaced relation to the floor and allow pivotal movement between a plurality of positions of use.

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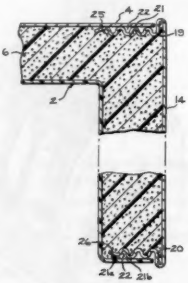
3,794,396

## REFRIGERATOR CABINET CONSTRUCTION

Leonard L. Vick, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 21, 1972, Ser. No. 264,939
Int. Cl. F25d *11/00*
U.S. Cl. 312—214 4 Claims



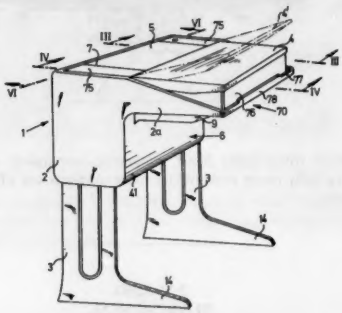
A refrigerator cabinet including insulated walls comprising a plurality of sheet members collectively forming the spaced case and liner surfaces of the walls. In the joints or seam areas in which edge portions of adjacent sheet members overlap, the edge portion of one of the members is provided with corrugations running parallel to the sheet member edge. These corrugations and the overlapping surface of the adjacent sheet form a plurality of parallel passages extending transversely of the path of any foam flow into the joint which permit the expansion of foam therein to prevent leakage of foam through the joint.

3,794,397

## VERTICALLY ADJUSTABLE SCHOOL DESK WITH AN INCLINED TOP

Fritz Flototto, 4830 Gutersloh 16, Gutersloh, Germany

Filed June 21, 1972, Ser. No. 264,822
Claims priority, application Germany, June 30, 1971, P 21 32 626.1; England, Dec. 10, 1971, 57,589/71; Austria, Nov. 2, 1971, 9442
Int. Cl. A47b *27/00*
U.S. Cl. 312—231 11 Claims



A school desk comprises an oblique desk top arranged between two spaced vertical side boards. The desk has a compartment on which the side of the desk remote from the user, which adjoins the desk top, extends over the whole width of the desk and is accessible from above. A covering board of the compartment is capable of being slid between a closing position and an oblique use position and a non-use position in which the covering board is covered by the top of the desk. This sliding movement is made possible by means of guide grooves and guide rails arranged on the inner side of the desk. On each side of the desk there is a lower support and each such support is adapted to be slid into a cavity between the associated side board and the compartment side wall spaced from the side board. The support can be attached in a detachable manner at different vertical positions on the side wall of the compartment. On the side remote from the user of the desk the desk top is connected by means of a hinge at the top of the front wall of each support accommodating space. The upper connecting board extends at the same height as the surface of the covering board in the closing position and on the extended compartment side wall the guides for the covering board are arranged. In the oblique position the covering board lies on a frame board connected integrally with the desk side boards and the front wall. In a coplanar position it lies with the covering board in its closing position on the support rail, which is pivoted on the side, adjacent to the user, of the frame board and can be swung upwards into a vertical support position.

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3,794,398

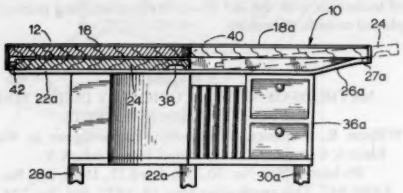
## CONVERTIBLE DESK AND CONFERENCE TABLE

Eugene A. Lindsay, 211 Essex, Kenilworth, Ill. 60506

Filed Mar. 27, 1972, Ser. No. 238,439
Int. Cl. A47b *85/00*
U.S. Cl. 312—241 5 Claims

A convertible desk and conference table having a table-top surface supported by a pillar means. The table-top surface includes a central section and two wing sections disposed along and rearwardly of the central section to define an open area. A leaf conforming in shape to the open area is disposed on guides beneath the central section of the table-top surface. A pair of camming ramps are disposed adjacent the sides of the

wing sections and operate to raise the leaf upward to the table-top surface. The convertible desk and conference table is changed from a desk configuration to a conference table con-




figuration by pulling the leaf along the guides and up the camming ramps. The leaf is then joined with the central section of the table-top surface to complete the formation of the conference table.

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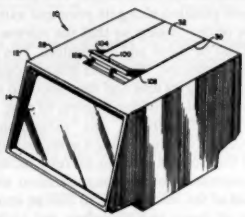
**3,794,399**

## PHOTOGRAPHIC APPARATUS FOR MOTION PICTURE PROJECTION

**James M. Conner, Mamaroneck, N.Y., and Henry J. Salvador, Whittier, Calif., assignors to Polaroid Corporation, Cambridge, Mass.**

**Division of Ser. No. 174,374, Aug. 24, 1971, Pat. No. 3,736,051. This application Jan. 22, 1973, Ser. No. 325,857**
**Int. Cl. G03b** *19/04, 23/02*; **A47b** *95/02*
**U.S. Cl. 312—244** **8 Claims**



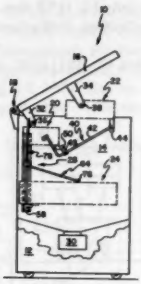
Projector for use with a motion picture film cassette, employing a housing having a front viewing face and a cassette-receiving cavity in communication with the top surface of the housing. A door member mounted at the rear of the opening and configured to block the opening when pivoted into closing position thereacross, carries a cassette-receiving guide which is adapted to receive the cassette from the front of the projector when the door is in its open position and to carry it to an operative location in the cavity when the door is pivoted to its closed position. The door is adapted to displace a drive mechanism of the apparatus into operative relation with the cassette, and the guide is coupled to the door through a lost motion member such that the cassette remains fixed in its operative location during engagement and disengagement of the drive mechanism. Additionally, a handle member is pivotally attached to the apparatus for selective displacement from a first position flush with a surface of the housing to a depressed position where it effects displacement of the door from its closed position and to an upright position where it is accessible for carrying of the unit.

**3,794,400**

## RACK MECHANISM FOR TOPLOADING DISHWASHER

**Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.**

**Filed June 26, 1972, Ser. No. 266,264**
**Int. Cl. A47b** *49/00, 81/00*
**U.S. Cl. 312—269** **10 Claims**



There is disclosed a top opening dishwasher having a lid pivoted along the rear edge thereof for selectively closing an upwardly open washing tub. A pair of upper racks are pivotally connected to the lid for movement into and out of the tub as an incident of lid closing and opening respectively. A bottom rack is mounted in the tub for vertical movement and is interconnected with the lid for raising and lowering as an incident of lid opening and closing respectively. The connection between the bottom rack and the lid is such that the bottom rack does not load the lid until the lid is partially open.

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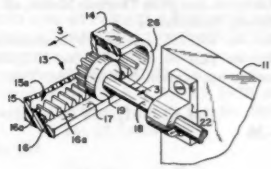
**3,794,401**

## DOOR GUIDE

**Carl J. Dean, Southbridge, and David M. Wright, Shrewsbury, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.**

**Filed Oct. 20, 1971, Ser. No. 190,915**
**Int. Cl. A47p** *88/00*
**U.S. Cl. 312—323** **1 Claim**



A simplified and dependable construction for the support and guidance of retracting doors and other closures of the type that are patricularly useful in business type file cabinets. A preferred construction employs a shaft attached to the door and is provided with gears at its opposite ends which serve as the hinge of the door. The gears are confined within a pair of door guides that contain linearly arranged gear teeth or a gear rack or projections within a guide track which is open on one side. The gear rack teeth mesh with the gears on the door and confine the path of travel of the door along the path of the guides. The outer walls of the guide track prevent derailing of the shaft and confine the movement of the door to rectilinear translation along the trackways without undesired twisting movement. The multiple gear-rack arrangement ensures a timed uniform rectilinear movement of the door. The front and rear ends of the guides are closed to prevent removal of the door and to provide door stop locations.

3,794,402

## METHOD OF MANUFACTURING AN ELECTRIC DISCHARGE TUBE OR AN ELECTRIC LAMP

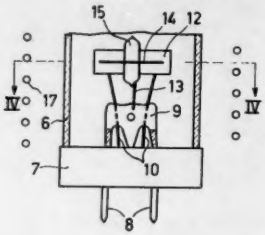
Johannes Antonius Maria Ridders; Rein Willemse Van Der Wolfe, and Adrianus Josephus Theresia Mollet, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 49,379, June 24, 1970, abandoned. This application July 12, 1972, Ser. No. 271,058

Claims priority, application Netherlands, June 27, 1969, 6909890

Int. Cl. H01j *9/38*

U.S. Cl. 316—14 2 Claims




A method of manufacturing an electric discharge tube or an electric lamp starting from a vessel wherein a closed holder is placed which is provided with a quantity of one or more substances to be introduced into the vessel. Subsequently, a desired gas atmosphere is brought about in the vessel and the vessel is closed. Finally the holder is opened by means of current passage through a heating element present in the vessel. The heating element is connected to the ends of an electric conductor placed in the vessel, for example, a coil, between which ends an electric voltage difference is profuced by means of induction with the aid of a current-conveying primary coil placed outside the vessel.

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3,794,403

## APPARATUS FOR INTRODUCING A SUBSTANCE INTO A DISCHARGE TUBE OR ELECTRIC LAMP

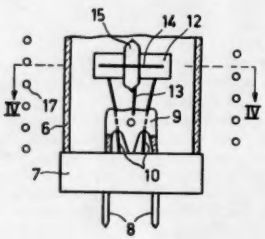
Johannes Antonius Maria Ridders; Rein Willemse Van Der Wolf, and Adrianus Josephus Theresia Mollet, all of Emmasingel, Eindhoven, Netherlands

Division of Ser. No. 49,379, June 24, 1970, abandoned. This application July 10, 1972, Ser. No. 270,340

Claims priority, application Netherlands, June 27, 1969, 6909890

Int. Cl. H01j *9/38*

U.S. Cl. 316—30 6 Claims




A method of manufacturing an electric discharge tube or an electric lamp starting from a vessel wherein a closed holder is placed which is provided with a quantity of one or more substances to be introduced into the vessel. Subsequently, a desired gas atmosphere is brought about in the vessel and the vessel is closed. Finally the holder is opened by means of current passage through a heating element present in the vessel. The heating element is connected to the ends of an electric conductor placed in the vessel, for example, a coil, between which ends an electric voltage difference is profuced by means of induction with the aid of a current-conveying primary coil placed outside the vessel.

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3,794,404

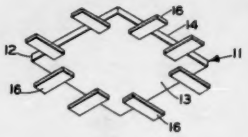
## METHODS OF MICROSCOPICALLY INSPECTING OPPOSITE SIDES OF OBJECTS

William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 30,379, April 21, 1970, Pat. No. 3,680,947. This application May 18, 1972, Ser. No. 254,550

Int. Cl. G02b *21/00*

U.S. Cl. 350—81 4 Claims




Microscopic inspection of objects such as beam-lead integrated circuits is accomplished by positioning the objects mounted on platforms in a spaced relationship under a vacuum pickup needle located in the field of view of the microscope. Rapid and accurate positioning is aided by air bearing facilities. One of the platforms includes a transparent disc for supporting the bottom sides of the objects. The disc is parallel to and spaced from a mirror which reflects an image of the bottom sides to the microscope. The microscope is first raised to its upper position along its principal axis and focused on the top sides of the objects so that the mirror image of the bottom sides is out of focus and not visible. The top sides are then individually inspected. Next, the microscope is moved to its lower position along its axis and then focused on the mirror image of the bottom sides of the objects so that the top sides are out of focus. Preferably, the magnification of the microscope while in its lower position is increased to provide a larger image of the bottom sides to thereby facilitate their inspection. The increasing of the magnification also decreases the depth of field of the microscope so that an image of the top sides is far out of focus and therefore not visible. This improves the clarity of the image of the bottom sides to further facilitate their inspection. The bottom sides are then individually inspected. During the inspection the objects are separated in accordance with certain characteristics with the aid of a vacuum pickup needle. The movement of the needle is limited by a ball plunger to prevent damage to the objects.

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3,794,405

## LIQUID CRYSTAL CELL AND METHOD FOR ITS MANUFACTURE

James Vincent Masi, 36-Belle Vale St., Monroe, Conn. 06468

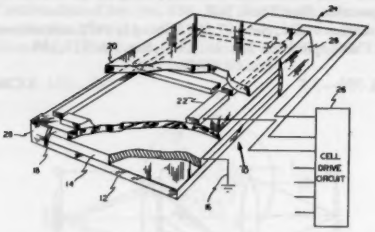
Division of Ser. No. 225,264, Feb. 10, 1972, Pat. No. 3,746,426, which is a continuation of Ser. No. 76,739, Sept. 30, 1970, abandoned. This application Mar. 29, 1973, Ser. No. 346,101

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC 4 Claims

A liquid crystal cell and method for its manufacture. The cell has a strip of microglass paper impregnated with liquid crystal material sandwiched between two substrates, each of which has conductive material plated thereon. If coincident

selection of a point in the cell is desired, the conductive material on the substrates are in the form of parallel strips with the strip on one substrate being perpendicular to the strips on




the other substrate and a layer of non-linear resistance material is deposited over the conductive material on one of the substrates.

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**3,794,406**

**METHOD OF AND APPARATUS FOR OPTICAL MULTIPLE FILTERING**

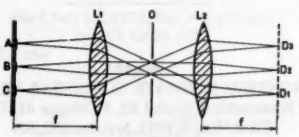
**Manfred Kock, Norderstedt, and Hermann Weiss, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Sept. 11, 1972, Ser. No. 288,106**

**Claims priority, application Germany, Sept. 18, 1971, 2146729**

**Int. Cl. G02b** *5/18*

**U.S. Cl. 350—162 SF** **10 Claims**




A method of, and an apparatus for, optical multiple filtering in which an object is simultaneously compared with a plurality of filters are described. By causing the object to modulate the spatially separated and spatially incoherent Fourier spectra of the filters and by imaging the modulated spectra on a detector plane in a spatially separated configuration an object may be compared with a large number of filters in a simple optical arrangement.

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**3,794,407**

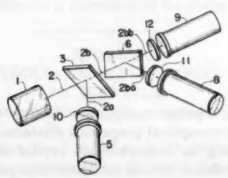
**COLOR PICK-UP DEVICE**

**Shigeru Nishimura, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Continuation-in-part of Ser. No. 883,795, Dec. 10, 1969, abandoned. This application May 1, 1972, Ser. No. 248,899**

**Int. Cl. G02b** *27/10*

**U.S. Cl. 350—171** **14 Claims**



A pick-up device adapted to generate a video color signal by the use of a plurality of pick-up tubes, wherein at least two dichroic mirrors are used to defocus an image forming light ray corresponding to the "red" signal and an image forming light ray corresponding to the "blue" signal in the vertical direction only, thereby preventing a decrease of the apparent resolution of a reproduced picture which tends to result from an imperfect registration of the respective color signals.

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**3,794,408**

**OPTICAL FILTER**

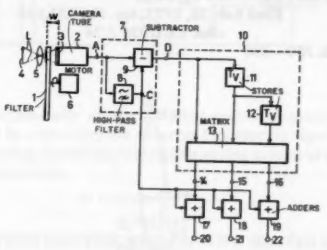
**Sing Liong Ian; Jan August Marcel Hofman, and Gijsbentus Bouwhuis, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 14, 1972, Ser. No. 280,083**

**Claims priority, application Netherlands, Aug. 14, 1971, 7111227**

**Int. Cl. G02b** *5/18*

**U.S. Cl. 350—162 R** **12 Claims**




An optical filter for use in a field-sequential colour television camera, for which purpose it is rotatably arranged in front of a light-integrating camera tube. The filter partly comprises sections which produce a reduction in definition and for this purpose are provided with a plurality of diffraction gratings having different spacings. The optical filter which owing to the provision of the diffraction gratings has a discontinuous light transmission characteristic, after integration of the light has a more or less continuous light transmission characteristic which corresponds in a desirable manner to an electric filter characteristic.

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**3,794,409**

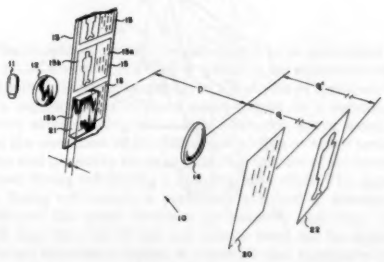
**METHOD AND APPARATUS FORMING PLURAL FOCUSED IMAGES WITH A COMMON LENS SYSTEM**

**Winston O. Johnson, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.**

**Continuation of Ser. No. 26,971, April 9, 1970, abandoned. This application Dec. 17, 1971, Ser. No. 209,399**

**Int. Cl. G02b** *27/00*

**U.S. Cl. 350—194** **12 Claims**



Method and apparatus for focusing a selected portion of an object at a conjugate plane different from the conjugate plane

of focus of other portions of the object. A focus change member made of a material having a refractive index different from that of air is placed adjacent the object, which may be a film negative or transparency. The portion of the object which is covered by the focus change member appears to lie closer to the focusing lens than does the uncovered portion of the object, so that the lens projects the focused image of the portion covered by the focus change member to a greater distance than the focused image of the uncovered portion of the object. A technique is also described for photographically enlarging an object to obtain discrete areas of dissimilar magnification on an image plane, and to obtain a magnification which is variable along a dimension of the image plane.

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**3,794,410**

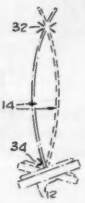
**ARTICULATED MIRROR**

**James E. Elliott, San Pedro, Calif., assignor to MCA Disco-Vision, Inc., Universal City, Calif.**

**Filed Feb. 20, 1973, Ser. No. 333,559**

**Int. Cl. G02b** *7/24*

**U.S. Cl. 350—285** **7 Claims**




An improved articulated mirror provides "fine" tracking control for a transducer arm and tracking assembly which is servo controlled from the playback circuits to follow the information track on a video disc. A polycrystalline piezoelectric bimorph motor driver is constrained to bend in an arcuate bow shape. The mirror is mounted on a free end that moves through an angle as the main body bows.

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**3,794,411**

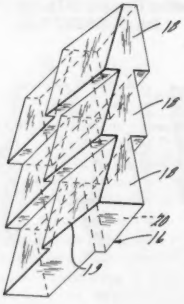
**MOTOR VEHICLE REAR VIEWING SYSTEM**

**Ronald G. Gray, Westcliff-On-Sea, England, assignor to Ford Motor Company, Dearborn, Mich.**

**Filed Mar. 26, 1973, Ser. No. 345,030**

**Int. Cl. G02b** *5/08*

**U.S. Cl. 350—302** **4 Claims**




A rear viewing system in which light is deflected onto a mirror by a prism, the prism being divided into vertical strips each with a slightly different horizontal angle to expand the field of view.

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**3,794,412**

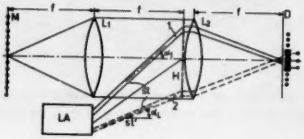
**HOLOGRAPHIC MEMORY WITH IMAGE LOCATION CORRECTION**

**Bernhard Hill, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 197,891, Nov. 11, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,130**

**Int. Cl. G02b** *27/00*

**U.S. Cl. 350—3.5** **1 Claim**




An apparatus for digital deflection of a radiation beam, in particular for use in a holographic storage system, is described. It is shown that if the apparatus is provided with a system which digitally varies the beam direction and with a system which is capable of digitally displacing the radiation beam parallel to itself the defects due to optical elements which cooperate with the deflection apparatus may be compensated for.

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**3,794,413**

**STRONTIUM FORMATE NONLINEAR DEVICE**

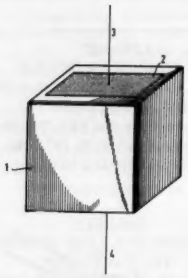
**Siegfried Haussuehl, Weyertal 82, 5 Cologne 41, Germany**

**Filed Mar. 7, 1972, Ser. No. 232,409**

**Claims priority, application Germany, Mar. 26, 1971, P 21 14 842.5**

**Int. Cl. G02f** *1/00*; **H03f** *7/00*

**U.S. Cl. 350—160 R** **2 Claims**



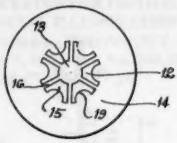

A nonlinear optical component having a single crystal which has electro-optical properties characterized by the single crystal being an orthorhombic crystal of strontium formate. The nonlinear optical component is particularly useful in a system for handling electromagnetic radiation in the infrared, visible and ultraviolet spectral ranges and for producing a harmonic frequency of a basic frequency of light radiated of the component.

3,794,414

## MULTIPLE FOCAL CONTACT LENS

Newton K. Wesley, Chicago, Ill., assignor to Wesley-Jessen Inc., Chicago, Ill.

Continuation of Ser. No. 536, Jan. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 632,398, April 20, 1967, abandoned. This application May 12, 1972, Ser. No. 252,758
Int. Cl. G02c 7/04
U.S. Cl. 351—161 2 Claims



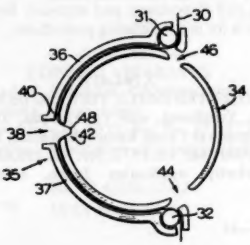

A contact lens construction suitable for use by individuals ordinarily requiring a bifocal prescription. The lens includes a light transmitting area interrupted by spaced-apart opaque portions. Continuous focal characteristics are achieved by utilizing light transmitting portions for providing vision requirements and for achieving a sufficient peripheral field, adequate illumination, and normal centering. A distance vision correction is provided in a centrally located lens area.

3,794,415

## ROLLING LOOP TRANSPORT MECHANISM

Peter Ronald Wright Jones, Brisbane, Queensland, Australia, assignor to Multiscreen Corporation Limited, Galt, Ontario, Canada

Filed July 13, 1972, Ser. No. 271,503
Int. Cl. G03b 1/20
U.S. Cl. 352—184 2 Claims




The invention provides a mechanism for transporting photographic film past an aperture in a projector, camera or other motion picture machine, and more particularly to a rolling loop film transport mechanism which transports film between a rotor and a stator for placing frame lengths of the film against an aperture in the stator such that each frame length then has substantially the same curvature as the aperture independently of the curvature of the stator.

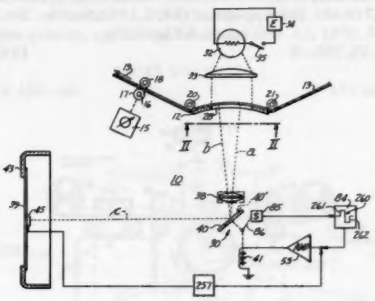
3,794,416

## SENSING FIDUCIAL MARKINGS FROM MOTION PICTURE FILM

Robert F. Johnston, Wildwood, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 175,483, Aug. 27, 1971, Pat. No. 3,713,733. This application May 22, 1972, Ser. No. 255,892
Int. Cl. G03b 41/10
U.S. Cl. 352—92 6 Claims

Fiducial markings having different relative contrasts are sensed from an information carrier. Different first electric signals corresponding, respectively, to the different relative contrasts are generated in response to the fiducial markings. Sensing signals indicative of the fiducial markings substantially independently of the different relative contrasts are produced by converting the different first electric signals into corresponding second electric signals having at least one common characteristic.

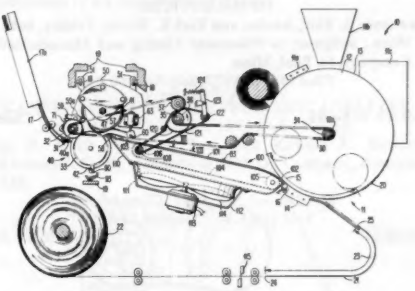



3,794,417

## HIGH SPEED PRINTING SYSTEM WITH HEATED ROLL FUSER

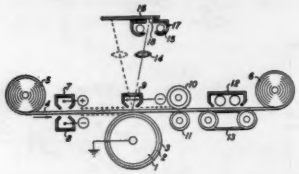
James Andrew Machmer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,482
Int. Cl. G03g 15/00
U.S. Cl. 355—3 14 Claims



Thermoplastic powder images delivered in succession from the transfer station of a copy machine or the equivalent station of another electrostatic printer at a high rate of speed are fixed to a support sheet by heat and pressure in a substantially slower moving fusing roll couple. This differential speed enables the operation of the fusing roll couple at lower temperatures and pressures to make practical the use of an internally heated fusing roll having a deformable surface. The speed of the fusing roll couple is perferably selected to substantially eliminate the space between successively delivered copies such that the rolls of the roll couple need not be separated between successive copies. A conveyor that transports copies to the roll couple is preferably driven with a programmed speed to match the speed at which a copy is generated and to alternately match the slower speed of the fusing roll couple as the copy is introduced thereto.

3,794,418
IMAGING SYSTEM
Katsuo Makino, Odawara; Akira Yoshikawa, and Toshio Nagashima, both of Tokyo, all of Japan, assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 121,052, March 4, 1971, Pat. No. 3,719,481. This application Oct. 2, 1972, Ser. No. 294,409
Int. Cl. G03g 15/00
U.S. Cl. 355—3 11 Claims



An electrically insulating web is charged on a first side with an electrostatic charge of one polarity and charged on a second side with an electrostatic charge of a second polarity. The first side of the web is brought into contact with a photoconductive layer and the layer is then exposed to a light pattern. The second side of the web is subjected to ions having a polarity of charge opposite to the polarity of charge on the second side. The resulting electrostatic latent image formed on the second side of the web may be developed with electroscopic toner particles.

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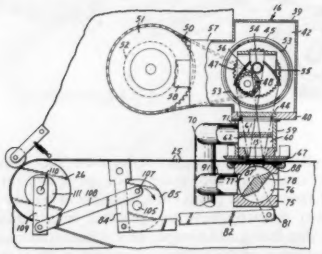
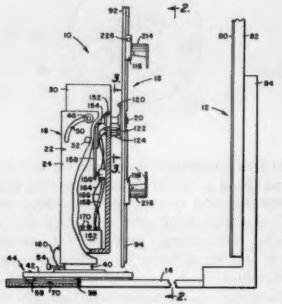
3,794,419
DUPLICATING MACHINE TO CONVERT MICROFILM TO MICROFICHE
Lawrence A. Flor, Anoka, and Earl K. Hoyne, Fridley, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 3, 1972, Ser. No. 250,040
Int. Cl. G03b 27/20
U.S. Cl. 355—91 7 Claims



A film exposing device for use in a machine to convert information on a strip of microfilm to information in the form of microfiche. The exposing device comprises a light source about which a rotary shutter is positioned. Light from the source is directed onto the strip of microfilm which is placed and held by air pressure and a resilient platen in intimate contact with a wide duplicating film advanced through the device in a direction normal to that of a strip.

3,794,420
PHOTOMECHANICAL APPARATUS FOR MANIPULATING IMAGE FORM
Clarence R. Gilman, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Division of Ser. No. 219,742, Jan. 21, 1972, Pat. No. 3,743,415. This application Feb. 8, 1973, Ser. No. 330,817
Int. Cl. G03b 27/68
U.S. Cl. 355—78 5 Claims



Photomechanical apparatus and procedures are applied to obtain controlled manipulations of image representations having particular unity in topographic mapping including slope mapping, relief mapping, and symbol discrimination. Negative and positive transparencies are made photographic copy in the apparatus for enabling production of enhanced and reduced versions of representations, respectively. Spaced beams from revolving light sources are directed to pass through such copy so as to expose photographic film materials maintained spaced from the copy. Selective adjustments of light spacing and dispositions and exposure limits in the apparatus adapt it for use in differing procedures.

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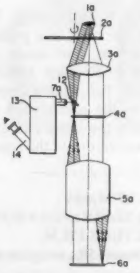
3,794,421
PROJECTED IMAGE VIEWING DEVICE
Ichiro Kano, Yokohama, and Yu Yamada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 21, 1972, Ser. No. 236,686
Claims priority, application Japan, Mar. 22, 1971, 46/4616313
Int. Cl. G03b 13/26
U.S. Cl. 355—45 9 Claims



A projected image printing device in which a photo-sensitive plate on the surface of which printing is done is provided at an exit side of an imaging lens used for mask printing and has such exit pupil as being infinity or almost infinity, and at

the same time a mask is positioned at incident side of said imaging lens at such position as being conjugate with the photo-sensitive plate, and also has an illuminating optical system to illuminate said mask.

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3,794,422

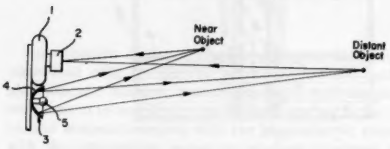
## METHOD AND APPARATUS FOR PHOTOGRAPHING BY ARTIFICIAL ILLUMINATION

Anwar Chitayat, 8 Gilbert Ln., Plainview, N.Y. 11803

Filed June 7, 1972, Ser. No. 260,583

Int. Cl. G03b 27/76

U.S. Cl. 355—67 15 Claims




This invention relates to method and apparatus for simultaneously photographing near and distant objects by means of artificial illumination so as to obtain substantially uniform reflected illumination from such objects on the film of the camera. The invention resides broadly in a greater attenuation of the reflected light returned to the camera from the near objects than from the distant objects.

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3,794,423

## COPYING APPARATUS

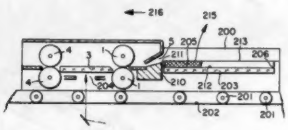
Gerhard Petersdorf, Pohlheim, Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 13, 1972, Ser. No. 271,272

Claims priority, application Germany, July 20, 1971, 2136142

Int. Cl. G03b 27/62

U.S. Cl. 355—75 2 Claims



This specification discloses improvements in a copying apparatus of the type wherein sheet originals or thicker books may be selectively moved along a copying window and wherein a conventional transport mechanism for sheet originals is connected to a transparent book support positioned on an extension of the transport mechanism, said transport mechanism for sheet originals and said book support being selectively moved in common. The improvements consist in a threshold means provided in front of the transport mechanism and a thick cover cloth provided for the book support. The threshold means is projected upwardly beyond the plane of the book support and positioned at a lower level than the cover cloth.

3,794,424

## METHOD AND APPARATUS FOR DETERMINING THE COLOR OR CUT DIAMONDS

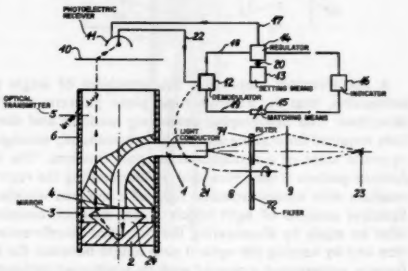
Manfred Eickhorst, Hans-Henny-Jahnn-Weg 21, and Godehard Lenzen, both of Hamburg, Germany, assignors to said Eickhorst, by said Lenzen

Filed Mar. 4, 1971, Ser. No. 121,111

Claims priority, application Germany, Mar. 13, 1970, P 20 11 931.7

Int. Cl. G01j 3/50

U.S. Cl. 356—30 12 Claims



The diamond is held by a well known holder below its holder or mounting edge leaving its upper portion with the planar surface and the facets fully exposed. A light ray of a predetermined wave length entering the diamond through the upper planar surface is totally reflected within the diamond in accordance with the geometric configuration of rays and emerging from the facets of the diamond. The amount of attenuation between the entering and the emerging light ray is measured photoelectrically, whereby attenuations of the entering light ray caused by surface reflections and by varying adjustments of the diamond are avoided.

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3,794,425

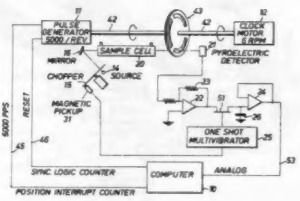
## SCANNING INFRARED SPECTROSCOPIC ANALYZER USING ROTATING VARIABLE FILTER

Vigo N. Smith, Houston, Tex., and Richard C. Bowers, Richmond, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1972, Ser. No. 282,802

Int. Cl. G01n 21/34; G01j 3/48

U.S. Cl. 356—51 7 Claims



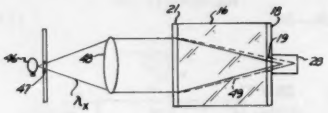
A fast spectroscopic analyzer wherein chopped infrared light is passed through a sample cell, a rotating variable filter and to a detector. The angular position of the filter corresponds to various wave lengths of light and is used to synchronize a recording system, recording signals of interest.

3,794,426

## HOLOGRAPHIC SPECTROMETER

Rolf K. Mueller, Brighton, Mich., and Adolf W. Lohmann, La Jolla, Calif., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 176,623, Aug. 31, 1971, abandoned. This application Dec. 8, 1972, Ser. No. 313,228
Int. Cl. G01j 3/28
U.S. Cl. 356—98 9 Claims



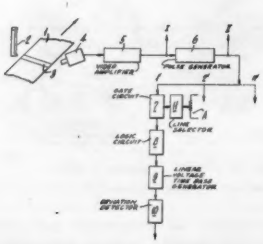
A spectrometer employing the principles of single point holograms, that is, Fresnel zone plate patterns (FZP), is described. The holographic recording medium and the pinhole required for making an FZP are permanently arranged on opposite sides of a transparent support medium. The interference pattern is then recorded by illuminating the recording medium with monochromatic light of a selected wavelength. Spectral analysis of light which is not monochromatic can later be made by illuminating the recorded interference pattern and by varying the optical path length between the interference pattern and a second pinhole positioned in front of a detector. Changes in the optical path between the second pinhole and the interference pattern correspond to changes in the wavelength of light which is focused on the permanently positioned pinhole. Different wavelengths can thus be detected by varying the optical path length between the second pinhole and the interference pattern and noting the intensity which passes through the fixed pinhole. The permanent mounting relationship of the illuminated pinhole and the interference pattern eliminates the usual difficulty of aligning these two components to some small fraction of a wavelength, and any aberrations produced by the structure or recording medium are cancelled during the illumination of the pattern.

3,794,427

## OPTICAL PROFILE DETECTOR WHOSE FUNCTION IS NOT ADVERSELY AFFECTED BY SURFACE CONDITIONS OF STRIP-SHAPED MEMBER

Hideo Shibata; Takashi Emori, both of Yokohama; Kazuo Kurasawa; Masao Okabe, both of Hamamatsu, and Tamio Santo, Amagasaki, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to and Hamamatsu Terebi Kabushiki Kaisha, Hamatsu-shi, Shizuoka-ken, both of, Japan

Filed June 6, 1972, Ser. No. 260,072
Claims priority, application Japan, June 8, 1971, 46-40890
Int. Cl. G01n 21/32
U.S. Cl. 356—120 2 Claims



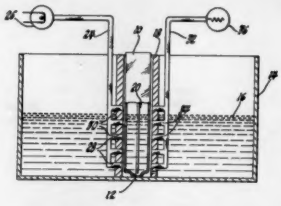
An optical profile detector is provided in which a light pattern projected upon the surface of a specimen is varied depending upon the profile of the specimen; and the projected light image is scanned into electrical signals which in turn are shaped into pulses so that the deviations in profile of the specimen from the standards may be detected from the deviations of the time intervals between the pulses from a predetermined time interval.

3,794,428

## OPTICAL LIQUID LEVEL INDICATOR

Heinz Giesecke, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1972, Ser. No. 246,434
Int. Cl. G01b 11/00
U.S. Cl. 356—156 3 Claims



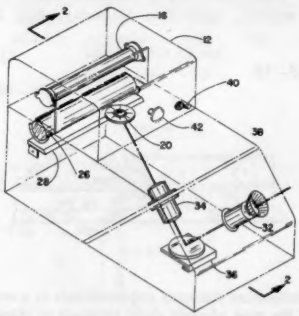
A transparent standpipe in a liquid container has plano-convex cylindrical lenses integrally formed in opposite sides thereof and has aligned with the lenses a diaphragm containing a slit. An elongated light source and an elongated light detector are placed on opposite sides of the standpipe in alignment with the lenses. The light is focused through the slit onto the detector only where liquid is present.

3,794,429

## DEVICE FOR INSPECTING EYE-CONTACTING SURFACES OF CONTACT LENSES

Erich A. Koeniger, 5600 Bridget St., New Orleans, La. 70002

Filed Oct. 6, 1972, Ser. No. 295,745
Int. Cl. G01b 9/00
U.S. Cl. 356—124 6 Claims



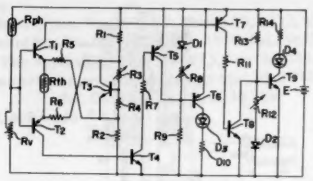
A closed device in which interior illumination is wholly provided and controllable to dimly and diffusively illuminate a contact lens from above, and slantingly and more brightly illuminate it from below. Magnification optics are positioned in the device to direct a line of sight,slantingly upward and approximately normal to the slanting illumination from below, to but not through a part of the inner peripheral eye-contacting surface of a contact lens, whereby malformations in said surface are magnified by said optics to be plainly seen in profile and not looked through without seeing.

3,794,430

## EXPOSURE METER HAVING MEANS FOR PREVENTING ERRONEOUS METERING

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 21, 1972, Ser. No. 282,171
Claims priority, application Japan, Sept. 2, 1971, 46-78862
Int. Cl. G01j 1/44, 1/42
U.S. Cl. 356—226 8 Claims



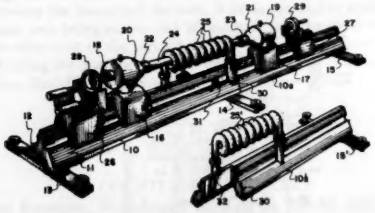

An exposure meter comprises exposure detecting means connected with an electric power source and including a photoelectric element, means connected with the photoelectric element to introduce exposure influencing factors thereinto, and means connected with the photoelectric element and with the introducing means to produce a proper exposure signal. Indicating means is connected with the exposure detecting means and operable to indicate a proper exposure in response to the proper exposure signal. Means is connected between the exposure detecting means and the indicating means to render the indicating means inoperable for any voltage drop of the source voltage below the minimum usable voltage.

3,794,431

## METHOD AND APPARATUS FOR STANDARDIZING OPTICALLY PUMPED LASER MATERIALS

Larry R. Rothrock, Poway, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 47,430, June 18, 1970, abandoned.
This application Aug. 17, 1972, Ser. No. 281,390
Int. Cl. H01e 3/00
U.S. Cl. 356—256 7 Claims



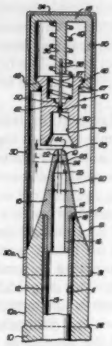
A system for standardizing optically pumped laser materials includes a given light pumping lamp of defined energy output, a given access area in fixed light coupling realtionship with the lamp for receiving laser material, and a resonant optical cavity for the access area of given defined characteristics. The arrangement is such that any reflected radiation from the lamp is prohibited from passing into the access area. Successive laser materials may then be received in the access area and subjected to substantially identical light pumping conditions to cause stimulated emission of laser light and the output laser light of each material monitored so that the materials may be categorized in accordance with their output characteristics.

3,794,432

## APPLICATOR FOR FLUIDS

Walter B. Spatz, Santa Monica, Calif., assignor to Spatz Corporation, Venice, Calif.

Filed Mar. 17, 1972, Ser. No. 235,689
Int. Cl. B43k 9/00
U.S. Cl. 401—262 8 Claims



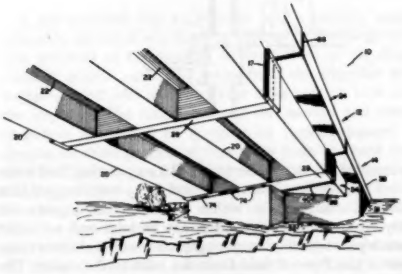
An applicator for fluids, such as cosmetic fluids to be applied to a person's skin, includijg a container for the fluid adapted to flow through a passage or orifice in its tip, the passage being of such length and diameter that the fluid tends to rise in the orifice to a greater extent than the length of the orifice for discharge onto a person's skin. When not applied to the skin, surface tension of the fluid in the orifice prevents leakage. A cap carries a small diameter punch or wire which is inserted into the orifice whenever the cap is replaced over the container to be assured that the orifice is clear, or to unplug it if restricted.

3,794,433

## SEGMENTAL PRECAST CONCRETE POST-TENSIONED OVERPASS BRIDGES WITH CANTILEVERED ABUTMENT

Morris Schupack, c/o Schupack Associates, 2701 Summer St., South Norwalk, Conn. 06905

Filed July 8, 1971, Ser. No. 160,707
Int. Cl. E01d 7/02
U.S. Cl. 404—1 4 Claims



A bridge structure particularly adapted for construction in skewed orientation with respect to a lower, overpassed roadway comprises a bridge portion, end abutments, and an intermediate support column. The bridge portion is constructed by supporting a plurality of precast concrete open-topped box-beams and precast L-shaped parapet-sidewalk members on

temporary falsework at the bridge site. Upstanding from the precast box beams are wooden flanges which are trimmed in place to provide temporary supports of desired heights for precast slabs forming a bed for the upper roadway. The variable-height supports are used to form a crown in the roadbed, or to form an inclined roadbed which may be part of a banked curve. The precast box-beams are joined together by formed-in-place concrete diaphragms which are poured simultaneously with a concrete roadbed, whereby a monolithic squared off bridge portion is formed. An intermediate support column engages one of the diaphragms, thereby eliminating an exposed transverse support beam. The bridge portion is post tensioned by means of longitudinal and transverse post tensioned tendons.

The squared-off bridge portion extends between two abutments, and any skew angle between the upper and lower roadways is accommodated in the abutments by a diagonal rake or relief "chamfer" of the abutment corner closest to the roadway. The far side of the squared off end of the bridge portion engages the top of the unraked portion of the abutment wall at an expansion joint, and is supported thereon; the remainder of the end of the squared off bridge portion being supported in cantilever manner, projecting beyond the diagonally raked corner of the abutment. The diagonally raked portion of the base wall of the abutment is substantially parallel to the lower roadway, thereby providing adequate horizontal clearance therefrom. The top of the abutment provides the approach roadway for the bridge. The top of the abutment is supported on and integral with the base walls of the abutment, with a portion cantilevered outward beyond the raked portion of the base wall to meet the squared off bridge portion.

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**3,794,434**

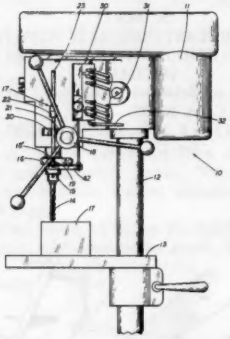
**ATTACHMENT FOR OPERATING TOOL ACCESSORIES**

**John B. Woodmansee, 7632 Fall Creek Rd., Indianapolis, Ind. 46256**

**Filed May 5, 1972, Ser. No. 250,515**

**Int. Cl. B23b** *51/06*

**U.S. Cl. 408—56** **9 Claims**



An attachment mountable to a tool for operating fluid actuable tool accessories. The attachment has a main body with a plurality of chambers in which a plurality of pistons are slidably mounted. Each chamber has an inlet and an outlet with each piston having a seal engageable with a chamber seat to control the flow of fluid from the inlet to the outlet. The head of each piston extends externally from the body and is contactable by a slide movable against the body. The slide is connected to the spindle sleeve of the tool and is movable in unison with the cutter to and from the work piece. The slide by contacting the piston heads forces the piston seals away from the chamber seats thereby allowing fluid flow from the chamber inlets to the chamber outlets which are connected to the tool accessories.

**3,794,435**

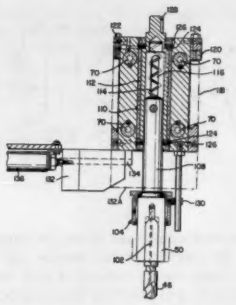
**ADJUSTABLE HORIZONTAL HOLE DRILLING APPARATUS**

**Ernest K. Haley, 134 Northwestern Parkway, Louisville, Ky. 40212**

**Division of Ser. No. 211,897, Dec. 27, 1971, Pat. No. 3,749,507. This application Apr. 12, 1973, Ser. No. 350,545**

**Int. Cl. B23b** *51/06*

**U.S. Cl. 408—59** **2 Claims**



Adjustable horizontal hole drilling apparatus for simultaneous drilling of a plurality of holes in work pieces such as steel beams and the like, wherein reciprocably movable horizontally opposed heads mount drills in horizontally opposed movable relationship for operating engagement with opposite sides of the work piece, the drills being positionally vertically adjustable conjointly and severally, and wherein work piece hold down and element clamping means are provided. The apparatus is especially suited for, although not restricted to, drilling of holes in I-beam flanges.

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**3,794,436**

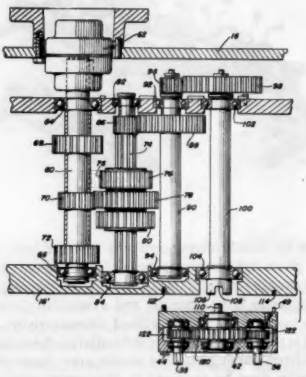
**MACHINE TOOL HAVING PLURAL INTERCHANGEABLE TRANSMISSIONS**

**Thomas H. Rowlett, Antioch, Ill., assignor to Rowlar Manufacturing Co., Franklin Park, Ill.**

**Filed Oct. 27, 1971, Ser. No. 193,126**

**Int. Cl. B23b** *47/14, 39/16*

**U.S. Cl. 408—124** **2 Claims**



A spindle-driving machine tool is provided which has a number of interchangeable gear boxes. The gear boxes are simultaneously operated by being coupled to a number of

transmission output shafts. Each of the gear boxes has a number of hex takeoffs all rotating at the same speed, but at different speeds from the hex takeoffs of the other gear boxes. The hex takeoffs are connected through universal drive assemblies to conventional spindles.

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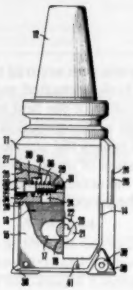
3,794,437

## BORING HEAD WITH AXIAL ADJUSTMENT MEANS

**Sutemarj Mazoguchi, No. 1738-Kita, Tawara-cho, Nara, Japan**

**Division of Ser. No. 239,647, March 30, 1972, which is a division of Ser. No. 93,932, Dec. 1, 1970, Pat. No. 3,730,636.**
**This application Apr. 10, 1973, Ser. No. 349,844**
**Claims priority, application Japan, Apr. 30, 1970, 45-42643**
**Int. Cl. B23b** *29/10*; **B23q** *3/00*
**U.S. Cl. 408—146** **1 Claim**



A boring head with bit adjusting means. The head has a body having a shank portion and a transverse channel in the lower part thereof and a transverse hole therein intersecting the channel and at right angles thereto. A pair of bit mounting bases is slidably positioned in the channel and a transverse hole extends through the bases generally aligned with the transverse hole in said body. A bolt is rotatably mounted in one end of the transverse hole in the body, extending through the transverse hole in the bases and threaded into the other end of the transverse hole in the body, the hole in the bases is larger than the bolt for permitting some relative movement between the bases and the bolt. A bit is secured to each of the bases, one being at one end of one base and the other being at the other end of the other base. Wedge means is provided for adjusting the positions of the bases downwardly in the channel when the bolt is only gently tightened.

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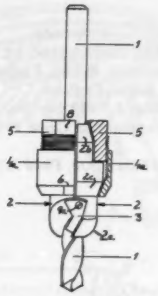
3,794,438

## COUNTERSINK ASSEMBLY

**Ake Knutsson, Strandvagen 10, Traryd, 280-50, Stromsnasbruk, Sweden**

**Filed Feb. 10, 1972, Ser. No. 225,150**
**Int. Cl. B23b** *51/10, 51/16*
**U.S. Cl. 408—231** **4 Claims**

The assembly includes at least two countersink cutting elements having a cutting edge structure. Each cutting element has an internal structural configuration adapted to enclose a drill member whereby a cutting tool is formed around the drill member to countersink any hole formed by the drill member. The external tool surface has a configuration that is operatively associated with a tightening mechanism. The tightening mechanism includes a top case section and a bottom case section which have mutually cooperating surfaces allowing the case sections to be tightly pulled toward each other. The inner surface configurations of the case sections are operatively associated with the external tool surface configuration in such a manner that the cutting elements are pressed tightly against the drill member when the case sections are tightened with



respect to each other. Means are also provided to prevent filings from appearing between the assembly and the internal walls of the holes being formed.

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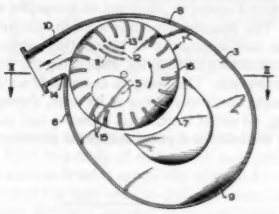
3,794,439

## RADIAL BLOWER

**Dietrich E. Haase, 544 Mayen, Habsburgring 90, Germany**

**Filed Nov. 29, 1972, Ser. No. 310,473**
**Claims priority, application Germany, Dec. 3, 1971, P 21 60 047.5**
**Int. Cl. F04d** *5/00*
**U.S. Cl. 415—54** **12 Claims**



A radial blower has an impeller with a radially vaned rim rotatably mounted in a housing adjacent a discharge conduit. The portions of the housing on both sides of the discharge conduit incline outwardly away from the impeller to form wedge-shaped inlet and discharge chambers on both sides of the impeller. The larger ends of the suction and discharge chambers are joined by a return or bypass channel which directs the main portion of flow away from the back into the impeller. The portion of the impeller between the suction and discharge chambers is bordered by a concavely curved flow diverting element having a radius of curvature slightly smaller than the impeller and a maximum distance at its mid-section, which is substantially equal to the radial length of the vanes on the rim of the impeller. An inlet or suction opening in the front wall of the housing is eccentrically disposed relative to the impeller and adjacent the inlet chamber. The inlet conduit is inclined toward the suction chamber. A set of curved deflectors is disposed substantially parallel to each other in the central chamber of the housing within the impeller vanes and substantially in line with the discharge chamber and conduit and having tip ends fairly close to the inner ends of the impeller vanes of the discharge conduit.

**ERRATUM**

For Class 415—90 see:
Patent No. 3,794,449

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**3,794,440**

## LIQUID DISPENSING DEVICES

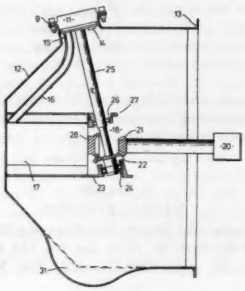
**David Roberts McMurtry, Bristol, England, assignor to Rolls-Royce Limited, London, England**

**Filed May 4, 1972, Ser. No. 250,362**

**Claims priority, application Great Britain, May 15, 1971, 15183/71**

**Int. Cl. F01m** *11/00*; **F04d** *13/14*, *13/16*

**U.S. Cl. 415—88** **8 Claims**



A liquid supply system comprising a rotatable housing for attachment to a variable pitch fan or propeller and to rotate therewith. The housing contains a pitch-control mechanism for the fan, and a quantity of lubricating oil sealed therein. The system includes a pump for dispensing the oil to the pitch control mechanism. The pump is connected to the periphery of the housing so as to receive at its inlet, during rotation of the housing, oil under centrifugal pressure and to dispense the oil radially inwardly to a point within the housing.

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**ERRATUM**

For Class 415—122 see:
Patent No. 3,794,456

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**3,794,441**

## VARIABLE PITCH PROPELLER

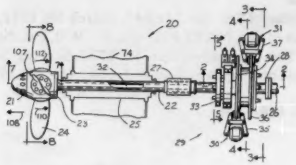
**Norman Allen Johnson, 5325 Tenth Ave., South Delta, British Columbia, Canada**

**Filed Sept. 11, 1972, Ser. No. 288,050**

**Int. Cl. B63h** *3/04*

**U.S. Cl. 416—152** **10 Claims**

This disclosure pertains to novel means whereby the blade pitch in a propeller may be varied by employing unidirectional rotation of a propeller shaft, a portion of the power driving the propeller, and a pair of braking means. A propeller hub having a plurality of pivotally mounted blades is mounted on the propeller shaft. A blade pitch actuator member having a hub-end and a brake-end extends through the propeller shaft into the propeller hub. An eccentric slider block secured to the hub-end of the actuator member is interconnected to each of the propeller blades. An actuator gear is screw-mounted on the brake-end of the actuator member. Three pairs of planetary each pair secured to a common shaft, are mounted on the propeller shaft in substantially parallel spaced relation to the axis of rotation of the propeller shaft. One of each pair of planetary pinions is meshed with the actuator gear and further meshed with an outer sun gear secured to a first brake actuated member. The other of each pair of planetary pinions is



meshed with an inner sun gear secured to a second brake actuated member. Each brake actuated member has a brake actuator means. Application of the first brake means causes the actuator gear to rotate in one direction and application of the second brake means causes the actuator gear to rotate in the other direction. Rotation of the screw-mounted actuator gear causes movement of the actuator member and eccentric slider block, thus altering the propeller blade pitch.

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**3,794,442**

## VARIABLE PITCH ROTARY BLADING

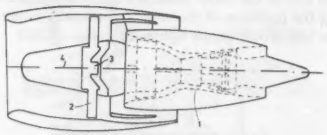
**David Roberts McMurtry, Alveston, England, assignor to The Secretary of State for Defense in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England**

**Filed Apr. 17, 1972, Ser. No. 244,650**

**Claims priority, application Great Britain, Apr. 27, 1971, 11728/71**

**Int. Cl. B64c** *11/06*

**U.S. Cl. 416—145** **4 Claims**



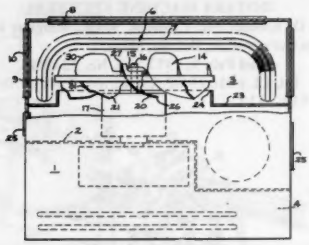
The centrifugal turning moments on a variable pitch fan blade are counter balanced by the centrifugal force on a cam follower member which is reacted by a cam member connected to the blade to provide a turning moment on the blade opposite to the centrifugal turning moment. The cam member is a cylinder surrounding the blade root and having at least one cam track. A reaction member in the form of a second cylinder concentric with the cam member and having oppositely inclined corresponding cam tracks is connected to structure stationary relative to the blade. The cam follower member is a roller engaging the cam tracks on both the cam member and the reaction member.

3,794,443

## W!DE DISPERSION FAN IMPELLER

William J. McCarty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 30, 1972, Ser. No. 285,073
Int. Cl. F04d 29/38
U.S. Cl. 416—175 2 Claims



A wide air dispersion propeller fan comprising a plurality of backwardly curved blades some of which are shaped to provide axial air flow and others of which additionally have trailing edge portions substantially parallel to the fan axis for providing radial air flow therefrom.

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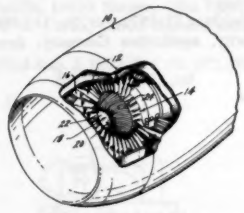
3,794,444

## ANTI-ICING SPINNER CONSTRUCTION

William B. Campbell, and Arthur P. Adamson, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 4, 1971, Ser. No. 186,074
Int. Cl. B64c 11/14
U.S. Cl. 416—201 7 Claims



A spinner construction for maintaining ice accumulation thereon to an acceptably low level during operation of a gas turbine engine under icing conditions wherein a plurality of spaced fins extend from the arcuate outer surface of the spinner. The fins are sized and arranged relative to impinging water droplets so that ice formation occurs principally on the fins rather than the spinner arcuate outer surface.

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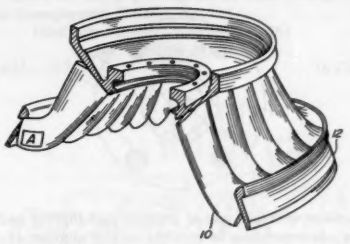
3,794,445

## WATER TURBINE RUNNER

Kiyoshi Watanabe; Kazuei Saito, and Tadaaki Kobayashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 84,524, Oct. 27, 1970, abandoned. This application Apr. 28, 1972, Ser. No. 248,681
Claims priority, application Japan, Oct. 31, 1969, 44-86833
Int. Cl. F01d 5/28
U.S. Cl. 416—241 21 Claims

A water turbine runner comprising a plurality of blades coaxially fixed to one axis each of said blades is composed of an iron-based material, wherein each blade is provided with a smooth surface weld metal on the surface where erosion due to cavitation liable to take place, said weld metal being made



of an erosion-resistant metal consisting essentially of up to 0.5 wt% of C, 10 to 30 wt% of Cr, 0.5 to 30 wt% of Co, up to 1 wt% of Si, up to 3 wt% of Mn, and the balance of Fe.

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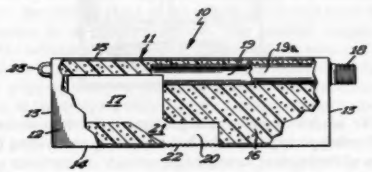
3,794,446

## FLOATABLE SUCTION HEAD

Harvey A. Ost, Rt. 1, Bay 229, Glasgow, Mont. 59230

Filed Dec. 13, 1972, Ser. No. 314,772
Int. Cl. F04b 21/00
U.S. Cl. 417—61 6 Claims



A floatable suction head is used with a hydraulic pump and is adapted to float in a body of water such as a settling pond. The floatable suction head is especially adapted for use with a hydraulic pump of the type used in drilling operations, and includes a housing having a bouyant body positioned interiorly thereof, the bouyant body having a ballast chamber therein. The ballast chamber communicates with the inlet and outlet of the suction head and, when filled with water, serves as a counter balance for the weight of the hose connected to the outlet of the suction head. With this arrangement, during operation of the pump, the suction head will float on the body of water in a horizontal level condition.

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3,794,447

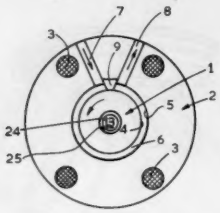
## COMBINED VISCOSITY PUMP AND ELECTRIC MOTOR

William Alan Bullough, Croosways, Hood Green, near Barnsley, England

Filed Mar. 31, 1972, Ser. No. 239,928
Claims priority, application Great Britain, Apr. 3, 1971, 8594/71
Int. Cl. F04b 17/00, 35/04; F01d 1/36
U.S. Cl. 417—356 9 Claims

A viscosity pump comprises an electrical stator, an electrical rotor, end plates, said electrical rotor being housed within said stator and within said end plates, a radial gap defined by said rotor and said stator and said end plates, said rotor or said stator and said end plates being rotatably drivable with respect to one another when electrical energy is supplied to said stator or said rotor, at least one pair of ports comprising an inlet port

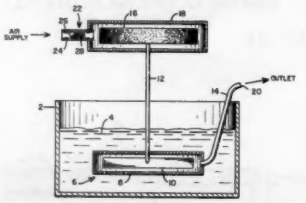
for the supply of fluid to be pumped in communication with said gap at one part thereof and an outlet port for fluid in communication with said gap at another part thereof and barrier means corresponding in number to the number of pairs of ports between said pair of inlet and outlet ports.



### 3,794,448
### AIR DRIVEN PUMP

**Robert V. Albertson, 2100 Shadowood Rd., Wayzata, Minn. 55337**

**Filed Aug. 14, 1972, Ser. No. 280,506**
**Int. Cl. F04b** *17/00*
**U.S. Cl. 417—406** **4 Claims**

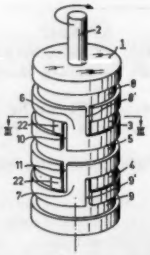


An air driven pump having a vane-type pump connected to a brush-type impeller which is rotated by air striking the bristles of the brush at an angle tangential to the periphery thereof and thereby causing said vane to pump fluids without the use of electricity or other spark generating devices which could ignite flammable fluids.

### 3,794,449
### VISCOSITY PUMP

**Geert Brouwer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 23, 1972, Ser. No. 283,213**
**Claims priority, application Netherlands, Aug. 31, 1971, 7111948**
**Int. Cl. F01d** *1/36*
**U.S. Cl. 415—90** **6 Claims**

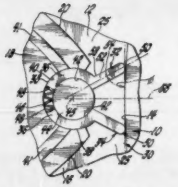


A viscosity pump for dosing small quantities of liquid including a rotor and driving shaft, and a housing surrounding the rotor, the cooperating surfaces of rotor or housing being provided with at least one pattern of shallow pumping grooves which communicate on one side with a liquid supply and on the other side with a liquid outlet, the side of the grooves communicating with the outlet being shallower than the rest of the groove.

### 3,794,450
### ROTARY MACHINE APEX SEAL

**Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Feb. 9, 1972, Ser. No. 224,883**
**Int. Cl. F01c** *19/02*; **F03c** *3/00*; **F04c** *27/00*
**U.S. Cl. 418—117** **4 Claims**

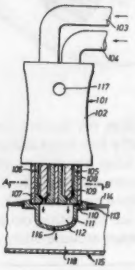


A rotary machine apex seal arrangement having a pair of seal members that are pivotally mounted on a pin on the machine's rotor and are biased by chamber pressure, centrifugal force and a compression spring therebetween to contact the machine's internal peripheral wall to provide leading and trailing seals.

### 3,794,451
### INTRODUCTION OF REACTANTS INTO MOULDS

**Karl Breer, Cologne, and Klaus Schulte, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**Filed June 21, 1971, Ser. No. 155,086**
**Claims priority, application Germany, June 26, 1970, 2031737**
**Int. Cl. B29d** *27/02*
**U.S. Cl. 425—4** **18 Claims**



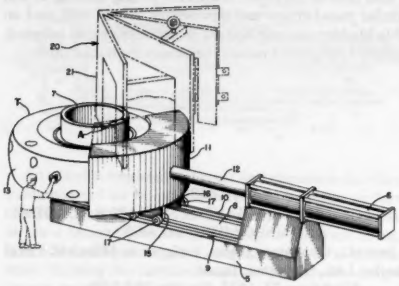
In the production of moulded articles wherein reactants are combined, react, and form the material, e.g. foam, composing the article, filling the mould, a mixing chamber for the reactants is combined with the mould. The reactants are introduced and mix in the mixing chamber and issue therefrom into the mould where they react for the formation of the article. In the reaction the mixing chamber can become integrated with the article. The mould can be a shell which becomes integrated with the material produced by the reaction, forming an outer skin of the article.

3,794,452

## APPARATUS USED IN REPAIRING DEFECTIVE SPOTS IN LARGE TIRES

Merritt W. Wolfe, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 5, 1972, Ser. No. 285,987
Int. Cl. B29h 5/02
U.S. Cl. 425—15 14 Claims



A portable apparatus used on the job site for repairing minor injuries in large earthmover tires which are not conveniently transportable. An arcuate segment with smooth inner faces for engaging the tire, is mounted for movement along a horizontally disposed trackway. A hydraulic cylinder is coupled to the segment for reciprocating the segment on the trackway towards and away from a vertically disposed hollow post around which a tire, to be repaired, is placed. A specially configured C-type clamp is coupled between the post and segment to bring the segment into greater compressive engagement with the tire positioned around the post.

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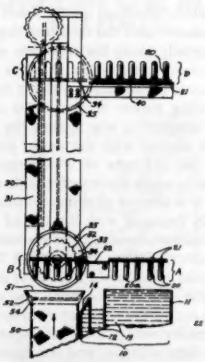
3,794,453

## CAPSULE MAKING APPARATUS

Salvador A. Padilla, 14819 Horger, Allen Park, Mich. 48101, and Richard A. Curtis, 36400 Howard Rd., Farmington, Mich. 48024

Filed Aug. 2, 1972, Ser. No. 277,396
Int. Cl. B29c 13/00
U.S. Cl. 425—270 5 Claims



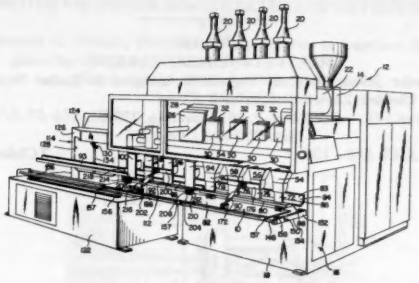
An improvement in capsule making apparatus is provided in the form of air duct means for conditioning freshly dipped capsule mold pins at a point in the work cycle just prior to the elevation of the pin bars to the drier stage. The film coating on the pins is thereby stabilized so that asymmetric film flow during transfer and elevation is substantially decreased.

3,794,454

## APPARATUS FOR AUTOMATICALLY TRIM FINISHING BLOW MOLDED PLASTIC ARTICLES

Lloyd D. Higginbotham, Williamston; Lars U. Graff, Okemos, and William A. Scott, Chelsea, all of Mich., assignors to Haskon Incorporated, Wilmington, Del.

Filed July 31, 1972, Ser. No. 276,461
Int. Cl. B29d 23/03
U.S. Cl. 425—387 B 16 Claims



A method and apparatus for initially blow-molding a plurality of hollow plastic articles and thereafter trimming the articles so that the top walls and tails formed in the blow molding operation are removed. The trim apparatus includes a set of transfer supports positioned below the molds at a mold station to receive the articles discharged from the molds. The articles are moved by the transfer supports horizontally in a direction parallel to the vertical plane of the tails in a first path from the mold station to a gripping station. The transfer supports release the articles at the gripping station and are returned to the mold station for receiving a second set of molded articles. A set of gripping supports positively grip the molded articles delivered to the gripping station by the transfer supports upon return of the transfer supports to the mold station. The gripping supports are movable in a second path from the gripping station to a conveying station. Cutting means are positioned in the second path for removing the excess top walls and tails of the molded articles as they move from the gripping station to the conveying station.

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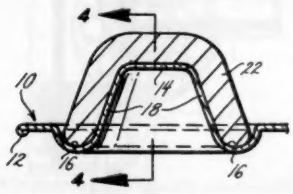
3,794,455

## MOLD FOR BUNS WHICH HAVE CENTRALLY-LOCATED RECESSES

Theodore B. Heiderpriem, 4225½ Ravenwood, Pine Lawn, Mo. 63121

Filed July 31, 1972, Ser. No. 276,746
Int. Cl. B29c 1/00
U.S. Cl. 425—403 8 Claims




A mold has a support of heat-resistant material, a surface which is displaced in the upward direction from that support, a recess of semi-circular cross section which is displaced in the downward direction from that support and which extends

around and extends laterally outwardly relative to that surface, and an inclined wall which extends upwardly from the inner periphery of that recess to the periphery of that surface. Yeast-raised dough can be placed so the center thereof rests on that surface, so the edge thereof extends into that recess, and so the intermediate portions thereof are supported by the inclined wall; and that dough will "proof" on the mold, and can then be baked to form a bun which has a centrally-located recess defined by an upwardly and outwardly inclined wall with gently-rounded upper edge.

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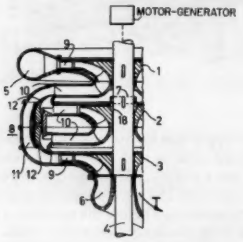
**3,794,456**

## MULTI-STAGE PUMP-TURBINE

**Fedor Jelusic, Zagreb, Yugoslavia, assignor to Escher Wyss Limited, Zurich, Switzerland**

**Filed Aug. 7, 1972, Ser. No. 278,232**
**Int. Cl. F01d** *1/08, 1/28*
**U.S. Cl. 415—122** **7 Claims**




A multi-stage pump turbine, especially for pumped-storage power station; the stages, operating on a common shaft, arranged in series; actuating means such as fixed connecting conduits passing the power medium between the individual stages as well as adjustable elements for shutting off the connecting conduits for the purpose of switching at least one stage on or off from the power medium side; optionally a clutch as an actuating means between the shaft and the rotor contained in the stage that can be switched on or off; all the stages and all the actuating means arranged in a common housing.

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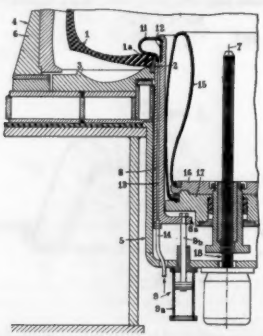
**3,794,457**

## TIRE CURING PRESS TIRE BEAD POSITIONING DEVICE

**Georges Gazuit, Chemin, Chauneau, 03, Montlucon, France**

**Filed Dec. 29, 1972, Ser. No. 319,915**
**Claims priority, application France, Jan. 3, 1972, 72.0021**
**Int. Cl. B29h** *5/02*
**U.S. Cl. 425—28 R** **5 Claims**



In a tire curing press comprising a mold including several component elements, said mold comprising as one of its component elements a lower flange provided with a centering ring, and a well extending coaxially downwards from said centering ring, a device for positioning the lower bead of a horizontally disposed crude tire around the centering ring of the lower mould member, said device being housed in said well and comprising a tubular member slidably disposed coaxially in said well and centering ring, said tubular member having a cavity formed in the outer peripheral wall thereof at the upper end of said tubular member, means for axially moving at will said tubular member up- and downwards in said well, and an inflatable bladder entirely housed in said cavity and adapted, when inflated, to project radially outwards from said cavity.

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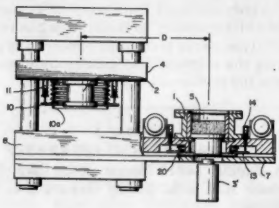
**3,794,458**

## VACUUM BRICK PRESS HAVING MOVABLE LOADING AND UNLOADING MEANS

**Shigeo Iwasaki, Okayama, Japan, assignor to Mitsuishi Fukai Tekkosho, Ltd., Okayama, Japan**

**Filed June 23, 1972, Ser. No. 265,739**
**Claims priority, application Japan, Aug. 2, 1971, 46-58161**
**Int. Cl. B28b** *3/08*
**U.S. Cl. 425—353** **6 Claims**



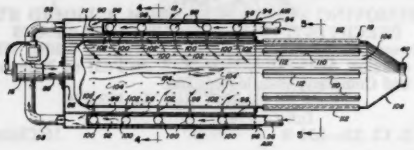
A brick press includes a fixed lower frame and an upper movable frame. The upper movable frame has thereon an upper movable piston. Mounted on the lower fixed frame are parallel rails. A transfer table has mounted thereon a mold and is movable horizontally along the rails into and out of alignment with the upper movable piston. A lower piston is carried with the transfer table in alignment with the mold. First movable chamber forming means are mounted coaxial with the upper piston and adapted to seal against the top of the mold when the mold is aligned with the upper piston to create a sealed chamber, the pressure of which may be selectively reduced. Mounted beneath the transfer table and coaxial with the lower piston is a second chamber forming means which may be selectively engaged with the top of the lower fixed frame to form a second chamber, the pressure of which may be selectively reduced. When the mold is filled with brick material, the transfer table, mold and lower piston are moved into alignment with the upper piston. The upper and lower chamber forming means are then actuated to isolate the brick material. The pressure within these chambers and within the brick material is then reduced, and the upper piston is actuated to press the brick material against the lower piston. After the pressing operation, the upper piston is raised, the two chamber forming means are retracted, and the transfer table and mold are again moved along the rails out of alignment with the upper piston. Then the finished brick may be removed from the mold, and new brick material may be added thereto.

3,794,459

## FURNACE EXHAUST TREATMENT SYSTEM

Cyril F. Meenan, Lincolnwood, Ill., assignor to Meenan Corporation, Skokie, Ill.

Filed Nov. 29, 1972, Ser. No. 310,651
Int. Cl. F23d 13/20; F23j 15/00
U.S. Cl. 431—5 14 Claims



An exhaust treatment process and apparatus for eliminating contaminated air by-products emitted by a hot air furnace or the like. The process includes transporting the contaminated air to a second furnace, providing in addition to said contaminated air, primary and secondary air to said second furnace, burning the contaminated air for a sufficient period of time to produce substantially contaminant free air, mixing the contaminant free air with outside air and transporting the mixed contaminant free air back to the first furnace and to the atmosphere.

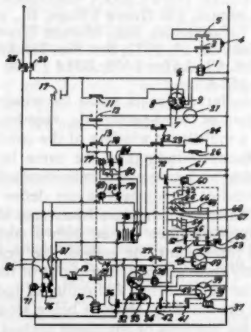
The apparatus employed to effect the above process includes a second furnace for burning the contaminated air having a combustion chamber with a burner having a fuel discharge nozzle disposed at one end of the chamber which is adapted to produce a flame by igniting a fluid fuel discharged under pressure through the nozzle. A conduit disposed in the chamber at positions along the length thereof carries the contaminated air in the chamber. The burner is supplied with fluid fuel and two sources of air to support combustion. The contaminated air is burned in the chamber which results in substantially contaminant free air. The contaminant free air is then put through a mixer and is recycled to the first furnace and vented to the atmosphere.

3,794,460

## CONTROL ARRANGEMENT FOR AIR VENTILATING AND AIR HEATING SYSTEMS HAVING AUTOMATIC RESET AND MANUAL RESET SAFETY DEVICES

Harold L. Kirk, Kirkwood, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 3, 1972, Ser. No. 294,557
Int. Cl. F23n 5/20
U.S. Cl. 431—37 6 Claims



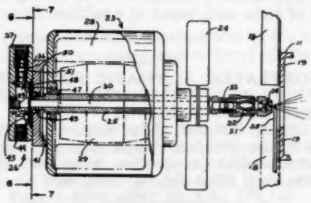
An improved control system for an air heating and air ventilating apparatus having a multi-volt electrical power source, a first power control circuit for energizing air ventilating means, and a second power control circuit for energizing the air ventilating means and an air heating means, the second power circuit including safety control means for energizing the second power control circuit in response to an unsafe operating condition and means to energize fuel preheat means at relatively low temperatures.

3,794,461

## MOTOR MEANS FOR SPACE HEATER AND METHOD OF USE

Donald K. Brazee, Florissant, Mo., assignor to Lambert Engineering Company, St. Louis, Mo.

Filed Apr. 11, 1973, Ser. No. 350,010
Int. Cl. F23l 9/04
U.S. Cl. 432—29 32 Claims



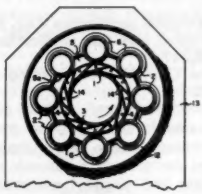
In a space heater incorporating a motor driven fan blade for propelling an ignitable fuel through an ignition means and into a heating chamber for generating heat for discharge into a space to be warmed, the motor incorporates a rotor means having a channel or passageway formed axially therein, with the fan blade mounted on one end of said rotor and a pump operatively associated with the other end of said rotor. Upon energization of the motor, the pump transfers the fuel from a reservoir through the rotor channel for discharge through the ignition means creating combustion in the heating chamber.

3,794,462

## ROTARY KILNS WITH UPHILL COOLER TUBES

Karl Jens Sylvest, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed July 21, 1972, Ser. No. 273,795
Claims priority, application Great Britain, Aug. 3, 1971, 36428/71
Int. Cl. F27b 7/38
U.S. Cl. 432—80 8 Claims



A rotary kiln equipped with specially constructed means for supporting the outlet ends of uphill cooler tubes independently of the kiln shell is disclosed. This support means includes a tubular body encircling the kiln shell in spaced apart relationship. The outlet ends of the cooler tubes are connected to this tubular body which itself is independently supported for rotation with the kiln shell.

3,794,463

## DYEING WATER SWELLABLE CELLULOSIC MATERIALS WITH BORATES IN A GLYCOL DYE SOLUTION

John F. Neumer, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Sept. 18, 1970, Ser. No. 73,664, now Patent No. 3,711,245. Divided and this application Aug. 8, 1972, Ser. No. 278,779

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 C 5 Claims

An improved process for dyeing water swellable cellulosic fibers, alone or blended with synthetic fibers, by contacting the fibers throughout with an aqueous solvent—or a solvent solution of a preformed disperse dye, said solvent consisting of ethylene glycol or a derivative thereof, the improvement comprising increasing the fixation of dye on the cellulosic fibers by adding an effective amount of boric acid, borax or a mixture thereof.

3,794,464

## ALKOXYLATED ALIPHATIC POLYETHYLENIMINES TO INHIBIT OZONE FADING OF DYED POLYAMIDES

Robert Alden Lofquist, Peter Reginald Saunders, and Gene Clyde Weedon, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,772

Int. Cl. D06p *5/02*

U.S. Cl. 8—165 4 Claims

When from about 0.3% to about 5% of polytertiary amines formed from the reaction of polyethylenimine with alkylene oxides are coated on nylon fiber, or are added to the dyebath, improved dyefastness is achieved compared to an untreated dyed nylon fiber when this fiber is exposed to ozone.

3,794,465

## FINISHES FOR TEXTILE FABRICS

Joseph J. Baron, Jr., Morris Plains, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,305

Int. Cl. D06m *13/16, 13/20*

U.S. Cl. 8—115.6 3 Claims

Crease-resisting and soil-releasing finishes for textile fabrics comprise esters of polyalkylene glycols alone or combined with copolymer acid emulsions, said finishes being curable by irradiation.

3,794,466

## SINGLE BATH CHROMIC CHLORIDE MINERAL DYEING PROCESS FOR CELLULOSICS

Charles J. Conner, Metairie, La., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 31, 1971, Ser. No. 176,736. Divided and this application Apr. 27, 1972, Ser. No. 248,247

Int. Cl. C09b *61/00;* D06p *3/60*

U.S. Cl. 8—52 3 Claims

Conventional "pearl gray" chrome green mineral dyeings require a double decomposition process for depositing green chromium oxide in cellulosics. By forming a unique alkaline complex of a chromic chloride with ammonium oxalate and zirconyl ammonium carbonate, a single dye bath is produced, enabling the dyes to apply the "pearl gray" chrome green mineral dyeing by a simple pad, dry, cure, and wash procedure. The dyeings are uniform and the cellulosic is not tendered or physically degraded. Not only does this invention reduce processing steps, but it eliminates the conventional problem of tendering resulting from drying the chromic chloride on cellulosics prior to processing through a second bath of soda ash and soap. The invention makes it possible to prepare a modified chromic chloride stock solution that can be used for either the conventional "pearl gray" processing or the single bath process described above.

3,794,467

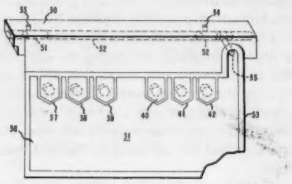
## REMOVING SUBSTANCES FROM A LIQUID BY PRECIPITATION IN POROUS GLASS BEADS

Thomas H. Adams, Newark, and Warren K. Miller, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 28, 1971, Ser. No. 193,475

Int. Cl. G01n *31/02, 33/16*

U.S. Cl. 23—230 R 16 Claims



A method and device for removing substances from a liquid sample. The device involves a receptacle containing porous particles and an agent that will precipitate the substance to be removed. The porous particles retain any precipitate formed. Also included is a method and apparatus for analyzing a liquid sample for a particular constituent where interfering substances may be present. The method comprises forcing substantially all of the sample through porous particles containing a liquid that will effect precipitation of the interfering substance and into a reaction chamber and determining the presence of the particular constituent. The liquid within the porous particles is chosen to precipitate substantially all of the interfering substance from the sample without removing substantially any of the particular constituent. Normally at least one reagent reactive with the particular constituent must be introduced into the liquid sample before the determination is made.

3,794,468

## MASS TRANSFER DEVICE HAVING A WOUND TUBULAR DIFFUSION MEMBRANE

Ronald J. Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

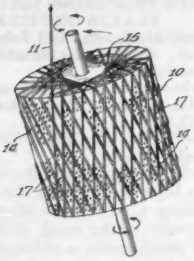
Filed Jan. 10, 1972, Ser. No. 216,669

Int. Cl. A61m *1/03;* B01d *13/00*

U.S. Cl. 23—258.5 13 Claims

A mass transfer device is made by winding a hollow tubular conduit of semi-permeable membrane about a core to form a multilayer winding of the conduit in which individual adjacent windings in the same layer are generally parallel to each other, but individual adjacent windings of the conduit in adjacent layers define an angle to each other. The ends of the core transverse to the tubular conduit windings are then potted with a curable sealant. After cure of the sealant, the ends of the wound core are cut transversely through medial portions of the cured sealant to sever the conduit into a plurality of individual conduit sections, the resulting sections being secured together at their ends by portions of the cured sealant, and having their hollow bores open to the exterior. Manifolds are

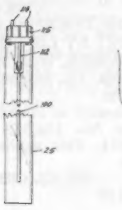
then applied to provide one fluid flow path passing through the hollow bores of the conduit portions and anther fluid flow path percolating between the exteriors of the conduit portions.



### 3,794,469
### BLOOD TEST SYSTEM

**Edward J. Rapoza, Butler, and Maxwell E. Siegel, Sussex, N.J., and Weems E. Estelle, Southport, Pasquale M. Petrucci, Orange, Joseph S. Linarducci, Wilton, John Hamma, Milford, and John Montgomery, Trumbull, Conn., assignors to Becton, Dickinson and Company, East Rutherford, N.J.**

**Original application Mar. 2, 1970, Ser. No. 15,469, now Patent No. 3,706,499, dated Dec. 19, 1972. Divided and this application Aug. 18, 1972, Ser. No. 281,945**
**Int. Cl. B01l** *3/00*
**U.S. Cl. 23—292** **6 Claims**



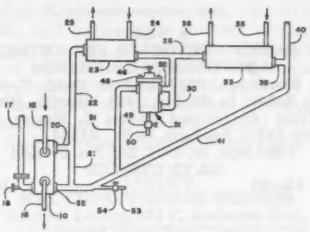
A cap adapted to hold a micro-pipette in substantially coaxial position within a vial. The cap has an outer cylindrical flange which releasab'y engages the mouth of the vial, and an inner cylindrical resilient tubular plug positioned coaxially within the flange. A flap with an aperture in its lower end extends from the free end of the tubular plug into the vial. The tubular plug and the flap hold the micro-pipette. Protuberances extending from the top of the cap are used to attach a record card.

### 3,794,470
### CONTINUOUS PLUTONIUM DISSOLUTION APPARATUS

**Frank G. Meyer and Charles N. Tesitor, Boulder, Colo., assignors to the United States of America as represented by the United States Atomic Energy Commission**

**Filed June 6, 1972, Ser. No. 260,155**
**Int. Cl. B01d** *11/02*
**U.S. Cl. 23—272.6 S** **1 Claim**

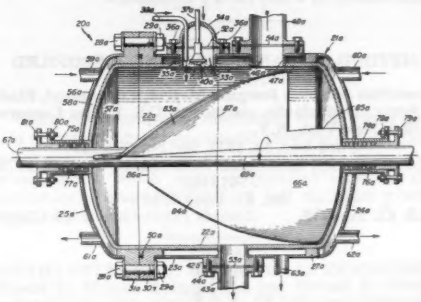
This invention is concerned with continuous dissolution of metals such as plutonium, wherein a high normality acid mixture is fed into a boiler vessel, vaporized and subsequently condensed as a low normality acid mixture, then conveyed to a dissolution vessel and contacted with the plutonium metal so as to dissolve the same in the dissolution vessel, reacting therewith forming plutonium nitrate, and the reaction products are then conveyed to the mixing vessel and maintained soluble by the high normality acid, with separation and removal of the desired constituent.



### 3,794,471
### CONTINUOUS POLYMERIZATION APPARATUS

**George A. Latinen, deceased, late of Springfield, Mass., by May V. Latinen, administratrix, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.**

**Filed Aug. 16, 1971, Ser. No. 172,145**
**Int. Cl. C08f** *1/98*
**U.S. Cl. 23—285** **8 Claims**



Apparatus for continuous mass polymerization under conditions which are substantially isothermal and substantially homogeneous with respect to composition adapted for use with high viscosity polymerizing fluid masses with a vapor space thereabove with remarkably high rates of thermal energy removal. The apparatus employs a reactor wherein there is a paddle assembly adapted to produce in a highly viscous fluid a combination of cyclical vertical mixing, rolling action and axial recirculaton. The reactor is equipped with a reflux condenser and control means regulating the amount of polymer withdrawn from the reactor when in use during polymerization.

### 3,794,472
### METHOD FOR PREVENTING THE FREEZING TOGETHER OF COAL PARTICLES

**Russell A. Macaluso, Oak Park, and Raymond J. Michalski, Riverdale, Ill., assignors to Nalco Chemical Company, Chicago, Ill.**

**No Drawing. Filed Dec. 11, 1972, Ser. No. 313,735**
**Int. Cl. C10l** *9/50, 10/00*
**U.S. Cl. 44—6** **4 Claims**

Coal particles are prevented from freezing together and/or to the surfaces of coal storage containers by coat-

ing either the coal particles and/or the surfaces of said storage containers with a thin film of a composition comprising a hydrocarbon liquid which has emulsified therewith from 5 to 75% by weight of an aqueous solution of a polyhydric alcohol.

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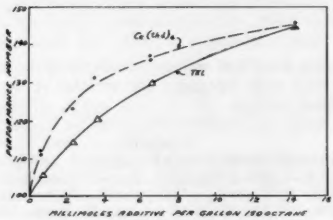
**3,794,473**
**RARE EARTH β-KETOENOLATE ANTI-KNOCK ADDITIVES IN GASOLINES**

**Kent J. Eisentraut, 1827 Trebein Road, Xenia, Ohio 45385; Robert L. Tischer, 3421 Idlewilde Blvd., Dayton, Ohio 45414; and Robert E. Sievers, 2628 N. Emerald Drive, Fairborn, Ohio 45324**

**Filed Sept. 20, 1972, Ser. No. 290,604**
**Int. Cl. C10l 1/30**
**U.S. Cl. 44—63** **16 Claims**




There is disclosed a motor fuel composition which consists essentially of gasoline and, as an antiknock agent, a small amount of a rare earth β-ketoenolate.

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**3,794,474**
**METHOD OF MANUFACTURING A PROFILED GRINDING WHEEL**

**Hendrikus Johannes Josephus Megens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Aug. 30, 1971, Ser. No. 176,127**
**Claims priority, application Netherlands, Sept. 5, 1970, 7013165**
**Int. Cl. B24b 5/26**
**U.S. Cl. 51—295** **3 Claims**

A method of manufacturing a profiled grinding wheel in which a grinding band is provided on the profiled circumference of a supporting disc, the band being built up from a synthetic binder and diamond grains. Starting material is a ceramic grinding wheel which, after profiling, is used for grinding a counter profile in a mould. By reducing the diameter of the supporting disc, a gap is formed between the circumference of said disc and the counter profile in the mould, the height of said gap being equal to the thickness of the grinding band to be provided. A mixture of synthetic binder and diamond grains is provided on the circumference of the supporting disc. By rotating the supporting disc in the counter profile, said mixture is distributed across the gap and a grinding band of constant thickness is formed. All operations are carried out with the same fixture of the supporting disc and the mould.

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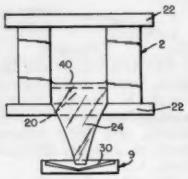
**3,794,475**
**METHOD OF PREPARING SOLUBLE SILICATE FLAKES OR FIBERS**

**Frank J. Lazet, Media, Pa., and John R. Ahern, Jeffersonville, Ind., assignors to Philadelphia Quartz Company, Philadelphia, Pa.**

**Continuation-in-part of abandoned application Ser. No. 238,819, Mar. 28, 1972. This application Apr. 18, 1973, Ser. No. 352,857**
**Int. Cl. C03b 37/06**
**U.S. Cl. 65—5** **14 Claims**

Fine particulate glass, a significant portion of which can be in the form of fine short fibers or flakes, is produced by passing a molten silicate glass at a carefully regulated viscosity in the range of from about 500 to about 10,000 poises across a nozzle having a horizontal slit-like orifice while simultaneously passing a pressurized




gas through the orifice and against the molten glass in order to atomize the molten glass to a fine particulate mass.

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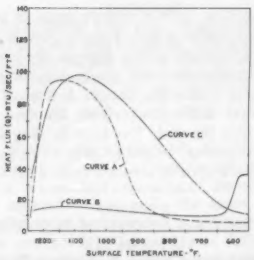
**3,794,476**
**METHOD FOR THERMALLY TEMPERING GLASS SHEET BY LIQUID QUENCHING**

**Edmund R. Michalik, West Mifflin, and Harold R. Gorman, Oakmont, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Continuation-in-part of abandoned applications Ser. No. 136,351, Ser. No. 136,352 and Ser. No. 136,353, all Apr. 22, 1971. This application Dec. 26, 1972, Ser. No. 318,360**
**Int. Cl. C03b 27/00**
**U.S. Cl. 65—116** **8 Claims**



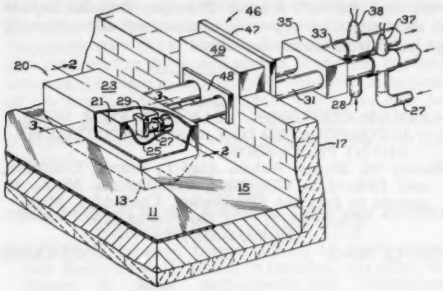

A method for tempering glass sheet is disclosed in which the glass is heated to a temperature above its strain point, but below its softening point and then contacted with an oxyalkylene polymer quenching medium. The oxyalkylene polymers provide a relatively high and uniform heat transfer which makes them particularly useful as tempering media for the tempering of thin glass.

3,794,477

## GLASS SHEET FLOAT APPARATUS WITH HEAT FLUX EDGE DETECTOR

Aloysius W. Farabaugh, Verona, and Joseph A. Gulotta, New Kensington, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 9, 1972, Ser. No. 261,497
Int. Cl. C03b 18/02
U.S. Cl. 65—158 18 Claims



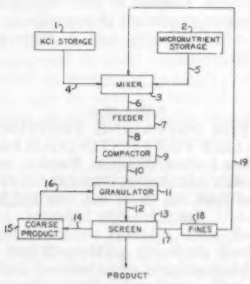
An apparatus for detecting the position of the edge of a body of hot glass floating on a pool of molten metal combines an elongated heat flux detector in a cooled enclosure and provides an output signal that is proportional to the amount of hot glass facing the detector. The device imposes no external forces upon the glass, does not contact the glass and may be held in a fixed position while providing a continuous signal despite glass movement.

3,794,478

## FERTILIZER COMPOSITION CONTAINING MICRONUTRIENTS

Alvin J. Dirksen, De Kalb, Ill., assignor to Kalium Chemicals Limited, Regina, Saskatchewan, Canada

Continuation-in-part of application Ser. No. 177,294, Sept. 2, 1971, which is a continuation-in-part of application Ser. No. 765,761, Oct. 8, 1968, both now abandoned. This application Sept. 29, 1972, Ser. No. 293,722
Int. Cl. C05d 9/02
U.S. Cl. 71—1 17 Claims




A novel phosphate-free granular potassium chloride (KCl) fertilizer composition is described in which the KCl has embedded within it predetermined amounts of micronutrient values. Optionally, macronutrients, e.g., secondary nutrient values and/or a source of the primary nutrient nitrogen, e.g., nitrogen-containing compounds are also embedded in the KCl. The novel KCl composition (other than for the absence of phosphorus) provides a balanced plant nutrient composition in that substantially each KCl granule is a balanced plant nutrient containing predetermined amounts of selected nutrients. Incorporation of the various nutrients in KCl is accomplished by compacting KCl and the added selected nutrients at pressures sufficient to cause plastic flow in the KCl while the KCl is in intimate contact with the added source of the selected nutrients. Typically pressures of 8,000 to 30,000 pounds per linear inch are used. Specific micronutrients exemplary of those incorporated in the KCl are the elements boron, manganese, copper, iron, zinc, molybdenum and cobalt. KCl compositions disclosed contain at least 0.05 percent by weight of the desired micronutrients. The quantity of micronutrient compound incorporated in the KCl varies considerably and depends upon soil and crop demand. Quantities of micronutrient incorporated can vary from 0.05 to 50, e.g., 0.1 to 30, weight percent based on KCl, disclosed include calcium, magnesium and sulfur.

3,794,479

## SOIL CONDITIONING PROCESS

John M. Loving, 404 E. Anderson Ave., Round Rock, Tex. 78664

Continuation of abandoned application Ser. No. 67,894, Aug. 28, 1970. This application July 14, 1972, Ser. No. 271,701
Int. Cl. C05f 11/08
U.S. Cl. 71—9 3 Claims

A selective biochemical destruction of the viable portion of selected type plant material provides a liquid composition with microscopic sized particulate organic material therein, which liquid composition improves the mechanical characteristics of soil and the plant growth supporting characteristics thereof.

3,794,480

## DIETHYNYLBENZYL ALCOHOLS AS HERBICIDES

Robert D. Dillard, Indianapolis, and Donald E. Pavey, Greenwood, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,704
Int. Cl. A01n 9/24
U.S. Cl. 71—122 5 Claims

Herbicidal compositions and methods in which an α,α-diethynylbenzyl alcohol or an ester thereof is the herbicidally active ingredient, employed pre-emergently.

3,794,481

## METAL FOAMS AND PROCESS THEREFOR

Leonard M. Niebylski, Birmingham, Chester P. Jarema, Detroit, and Peter A. Immethun, Southfield, Mich., assignors to Ethyl Corporation, Richmond, Va.

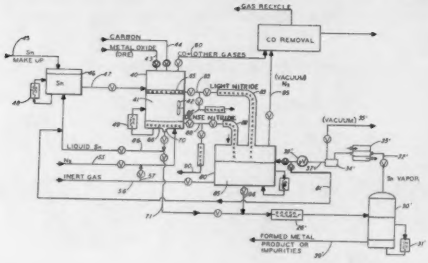
No Drawing. Continuation-in-part of abandoned application Ser. No. 202,603, Nov. 26, 1971. This application Feb. 12, 1973, Ser. No. 331,620
Int. Cl. C21d 1/18
U.S. Cl. 75—20 F 11 Claims

Metal foams produced from heat treatable alloys can be given improved strength by maintaining them, for a time sufficient for strengthening to occur, at a temperature at which a solid solution solute formation occurs. Additional strength can be achieved by subsequently subjecting the foam to a precipitation hardening. Preferred foams are of aluminum alloys, especially where the aluminum is alloyed with copper, magnesium, zinc or silicon.

## 3,794,482
## CARBOTHERMIC REDUCTION METHOD FOR CONVERTING METAL OXIDES TO METAL FORM

Robert N. Anderson, Palo Alto, and Norman A. D. Parlee, Los Altos Hills, Calif., assignors to Parlee Anderson Corporation, San Mateo County, Calif.

Continuation-in-part of abandoned application Ser. No. 851,299, Aug. 19, 1969. This application Feb. 5, 1971, Ser. No. 113,036
Int. Cl. C22b *21/02, 29/00, 35/00*
U.S. Cl. 75—84.1 R 24 Claims




A carbothermic reduction method wherein oxides of chemically reactive metals such as titanium, uranium, aluminum and boron are reacted with carbon in a molten metal solvent with the resultant production of carbon monoxide gas and of free metal which is present in solution in said solvent. In one embodiment, said carbothermic reduction takes place under an atmosphere of nitrogen gas whereby the metal oxide is converted to a solid metal nitride which, in the presence of the molten metal solvent, may thereafter be converted to a solution of the pure metal in said solvent as nitrogen pressures over the system are reduced.

The pure metal going into solution as derived from either the oxide or the nitride can be recovered from the solution by various phase separation methods, including those wherein the metal to be recovered or the solvent metal is distilled off or a liquid-liquid phase separation method is practiced. Furthermore, a phase separation may be accomplished by lowering the temperature of the system until the reactive metal precipitates but while the solvent is still in liquid form.

## 3,794,483
## PROCESS FOR DELIVERING FUEL AND AIR TO A ROTARY REDUCTION KILN

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 31, 1972, Ser. No. 302,606
Int. Cl. C22b *5/12*
U.S. Cl. 75—91 2 Claims

A process and apparatus are disclosed for delivering fuel and air to a rotary reduction kiln wherein both the fuel and air alternately flow through the same nozzle.

## 3,794,484
## MASTER ALUMINUM NICKEL ALLOY

Enrique C. Chia and Roger J. Schoerner, Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

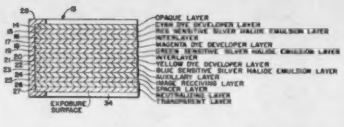
No Drawing. Continuation-in-part of abandoned application Ser. No. 147,196, May 26, 1971. This application July 2, 1971, Ser. No. 159,545
Int. Cl. C22c *21/00*
U.S. Cl. 75—147 4 Claims

Master aluminum alloy containing from about 8 percent to about 64 percent by weight nickel, from about 6 percent to about 52 percent by weight iron, from about 0.04 percent to about 40 percent by weight magnesium, and from about 24 percent to about 85.96 percent by weight aluminum. The alloy is particularly suited for use with additional amounts of aluminum in preparing a commercial alloy which may be cast, rolled and drawn into an electrically conductive aluminum alloy wire having improved properties of increased thermal stability, tensile strength, percent ultimate elongation, ductility, fatigue resistance and yield strength. The alloy may also be used in the preparation of articles of commerce conventionally prepared from aluminum alloys.

## 3,794,485
## COLOR DIFFUSION TRANSFER FILM WITH INCORPORATED DYE AND DESENSITIZING AGENT PRECURSOR

Stanley M. Bloom, Waban, Alan L. Borror, Lexington, and Richard B. Greenwald, Framingham, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 9, 1972, Ser. No. 261,270
Int. Cl. G03c *7/00*
U.S. Cl. 96—3 27 Claims




The present invention is directed to a photographic film unit adapted to provide, by diffusion transfer processing, selective dye image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which film unit includes a plurality of layers including a photosensitive silver halide layer having associated therewith dye image-forming material which is diffusible as a function of the point-to-point degree of silver halide layer exposure to actinic radiation; and, associated with at least one of said silver halide layers an initially substantially colorless, photographically inactive compound, adapted to provide a colored moiety which can function to prevent photoexposure of the silver halide layer when the film unit is removed from the camera for processing.

## 3,794,486
## METHOD FOR PREPARING PRINTING FORMS AND THE LIKE FOR CONTINUOUS PATTERNS

Harald Johan Luther, Alingsas, Sweden, assignor to Misomex Aktiebolag, Hagersten, Sweden

Filed Sept. 30, 1971, Ser. No. 185,248
Int. Cl. G03c *5/04*
U.S. Cl. 96—37 4 Claims

A method of preparing printing forms is disclosed wherein two photographic reproductions are sequentially made of the same template having two separate patterns thereon, each pattern having corresponding edges that can be positioned in exact coinciding register with the other. The photographic reproductions are then mounted by means of coinciding common punched holes in predetermined positions in an apparatus for printing the pattern onto a printed cylinder such that the front edge of one reproduction is positioned in an exact coinciding register with the rear edge of the other reproduction. A substantially invisible joint is thereby formed between the front and rear edges of the pattern printed onto the printing cylinder.

The separate patterns are formed by first covering one end of a pattern master or report pattern with a film im-

pervious to light rays that can affect photographic material. A plurality of holes exactly corresponding to buttons on a template foil are punched through both the report pattern and the film and both are then mounted on the template foil. After the other end of the report pattern is secured to the template foil, the ends of the report pattern and the film having the holes is cut through by a substantially waveformed cut line, and the ends, denoted the mask, are removed without disturbing the position of the portion of the report pattern still attached to the template foil. The first photographic reproduction is made of the combination of the template foil and the attached report pattern after the second portion of the film has been removed. The second photographic reproduction is made of the template foil and the mask which has been remounted on the buttons of the template foil, the previously attached portion of the report pattern having been first removed.

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**3,794,487**

## PROCESS FOR DEVELOPING DIAZOTYPE PHOTOPRINTS WITH AMMONIA GAS

**Lüto Röhrig, Naurod, Günter Kilian, Mainz-Kostheim, and Herbert Ewald Müller, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany**

**No Drawing. Filed Jan. 17, 1972, Ser. No. 218,589**
**Claims priority, application Germany, Jan. 20, 1971, P 21 02 558.1**
**Int. Cl. G03c *5/34***
**U.S. Cl. 96—49** **8 Claims**

This invention relates to an improvement in a process for developing photoprints on lacquered or unlacquered diazotype films or on lacquered diazotype papers, with ammonia gas, the improvement comprising exposing the photoprint, prior to the action of the ammonia, to an atmosphere containing at least one organic solvent vapor.

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**3,794,488**

## PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENT, COMPOSITION AND PROCESS

**Richard W. Henn, Pittsford, Burton D. Wilson, Webster, and Paul E. Woodgate, Chili Center, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed June 14, 1972, Ser. No. 262,905**
**Int. Cl. G03c *1/06, 5/30***
**U.S. Cl. 96—50 R** **12 Claims**

Amidoximes are active developing agents for photographic silver salts in strongly alkaline solutions. They may be incorporated in silver halide emulsions and they can be activated by immersion in alkali or by application of heat. They may be used in chemical or physical development; such as, diffusion transfer processing.

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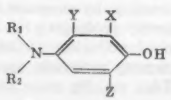
**3,794,489**

## METHOD OF DEVELOPING SILVER HALIDE PHOTOSENSITIVE MATERIAL

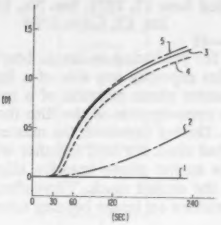
**Atsuaki Arai, Mitsugu Tanaka, Kinji Ohkubo, Tatsuya Tajima, and Yoshinori Tsuchiya, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

**Filed Dec. 10, 1971, Ser. No. 206,820**
**Claims priority, application Japan, Dec. 10, 1970, 45/109,869**
**Int. Cl. G03c *5/30***
**U.S. Cl. 96—66 R** **18 Claims**

A photographic developing process which comprises developing an exposed light-sensitive silver halide emulsion layer of a photographic material with an alkaline solution in the presence of hydroquinone and a derivative of p-amino-phenol having the general formula:




wherein each of $R_1$, $R_2$, X, Y, and Z is an alkyl group containing 1 to 4 carbon atoms is disclosed.




Also disclosed is the above compound and the method of preparation.

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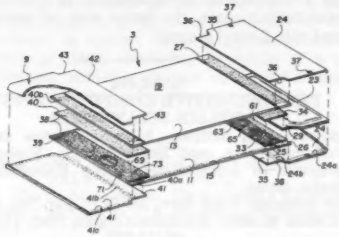
**3,794,490**

## PHOTOGRAPHIC DIFFUSION TRANSFER FILM UNIT WITH DISPOSABLE POD AND TRAP

**Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed Sept. 7, 1971, Ser. No. 178,101**
**Int. Cl. G03c *1/48***
**U.S. Cl. 96—76 C** **12 Claims**



A photographic film unit of the self-processing type, including an image-recording portion and reservoir means for accommodating a processing fluid. The reservoir means preferably includes a pod for supplying the processing fluid to the leading end of the recording portion, and/or a trap for collecting any excess of the fluid from its trailing end. The reservoir means is coupled to and supported on the image-recording portion in a relatively stiff manner, to facilitate handling of the film unit, and to improve certain of its other properties, but easily can be parted after processing of the film unit has been initiated, to separate the reservoir means from the image-recording portion.

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**3,794,491**

## AMPLIFICATION OF LOW-DENSITY POLYYNE IMAGES

**Paul M. Borsenberger, Hilton, Alfredo R. Guevara, Webster, and Joseph W. Manthey, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed June 14, 1972, Ser. No. 262,912**
**Int. Cl. G03c *5/24, 5/32***
**U.S. Cl. 96—48 R** **12 Claims**

Images formed in a layer of polyacetylenic material can be amplified by subjecting the imaged layer to radiation which is preferentially absorbed by the image areas.

## 3,794,492
## PROCESS FOR PRODUCING AN IMAGE BEARING SCREEN TRANSPARENCY

**Thomas D. Bertini, Tewksbury, Mass., assignor to Tober, Inc., Malden, Mass.**

**Filed June 17, 1971, Ser. No. 154,018**
**Int. Cl. G03c *5/04***
**U.S. Cl. 96—41** **12 Claims**

A process for producing an image bearing transparency which includes exposing one side of a light sensitive film through a master photo negative of a printed circuit and exposing the opposite side of the film through an opaque drilled mask. During exposure, the master photo negative, film and drilled mask are held together with the pad holes shown on the master photo negative aligned axially with the holes in the drilled mask. Thereafter, the film is developed to produce an image bearing screen transparency.

## 3,794,493
## PHOTOGRAPHIC LAYERS WHICH CONTAIN UV-ABSORBERS

**Johannes Sobel, Leverkusen, Fritz Nittel and Willibald Pelz, Cologne, and Wolfgang Himmelmann, Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed June 17, 1971, Ser. No. 154,229**
**Claims priority, application Germany, July 24, 1970, P 20 36 719.5; Switzerland, June 19, 1970, 9,319/70**
**Int. Cl. G03c *1/84***
**U.S. Cl. 96—84 R** **6 Claims**

The light stability of color photographic images is improved by overcoating the image carrying layer with a UV-protective coating which contains a UV-absorbing compound.

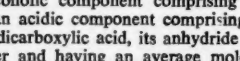
The UV-absorbing layer contains as UV-absorbent a 2-phenolbenzotriazole, the benzo ring of which is substituted with 2 butyl groups.

## 3,794,494
## PHOTOSENSITIVE COMPOSITIONS FOR RELIEF STRUCTURES

**Tsunetoshi Kai, Saitama, Mitsuhiro Inoue and Matuo Yoshida, Asaka, and Jun-Ichi Ueda, Wakoh, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan**

**No Drawing. Filed Nov. 24, 1971, Ser. No. 201,992**
**Claims priority, application Japan, Mar. 11, 1971, 46/13,009**
**Int. Cl. G03c *1/70***
**U.S. Cl. 96—35.1** **7 Claims**

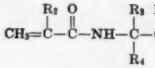
A photosensitive composition comprising (A) about 100 parts by weight of an unsaturated polyester produced from an alcoholic component comprising at least one polyol and an acidic component comprising at least one unsaturated dicarboxylic acid, its anhydride or its methyl or ethyl ester and having an average molecular weight of about 400 to 30,000 and ethylenic double bond equivalent of about 160 to 3,200, (B) about 1 to 50 parts by weight of an ethylenically unsaturated compound (i) of the formula



wherein

$R_2$ represents a hydrogen atom or methyl group; and
$R_3$, $R_4$, $R_5$ and $R_6$ represent a hydrogen atom, an alkyl group or cycloalkyl group having at most 10 carbon atoms,

and about 10 to 100 parts by weight of a compound (ii) of the formula



wherein

$R_1$ represents a hydrogen atom or methyl group;
$m$ is an integer from 2 to 4; and
X represents a radical of a polyol having a molecular weight of at most 1,000 and $m$ terminal hydroxy groups from which the terminal hydroxy groups are excluded, and,

(C) about 0.0001 to 10 parts by weight of a photopolymerization initiator.

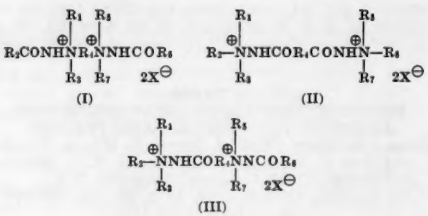
The compositions are exposed to a light source through an image-bearing transparency to effect polymerization, and unpolymerized unexposed monomer is washed away, leaving a relief structure suitable for printing plates. The plates are characterized by good flexibility, hardness and water resistance.

## 3,794,495
## PREVENTION OF STATIC IN LIGHT-SENSITIVE PHOTOGRAPHIC MATERIALS USING BIS-AMINIMIDE COMPOUNDS

**Masao Ishihara, Tsuneo Wada, and Hisashi Yamaguchi, Tokyo, and Sadao Sugita, Hanno, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan**

**No Drawing. Filed Dec. 16, 1971, Ser. No. 208,891**
**Claims priority, application Japan, Dec. 18, 1970, 45/113,103**
**Int. Cl. G03c *1/82***
**U.S. Cl. 96—87 A** **5 Claims**

Antistatic agents for use in light-sensitive silver halide photographic materials comprise bis-acyl hydrazinium salts having the formula



(I) (II)



(III)

wherein $R_1$, $R_3$, $R_5$ and $R_7$ are individually a lower alkyl group; $R_2$ and $R_6$ are individually an alkyl, aralkyl or aryl group or a hetero ring; $R_4$ is a divalent group; and X is an anion residue.

## 3,794,496
## PHOTOGRAPHIC PROCESSES AND IMAGING MEDIA THEREFOR

**John R. Manhardt, Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.**

**No Drawing. Continuation-in-part of application Ser. No. 45,909, June 12, 1970. This application May 26, 1972, Ser. No. 257,103**
**Int. Cl. G03c *1/02, 1/72***
**U.S. Cl. 96—114.1** **12 Claims**

An imaging medium comprises a photosensitive layer comprising a radiation-sensitive silver halide salt which upon exposure to an image pattern of activating radiation produces a catalyst capable of accelerating the decomposition of a decomposable metal compound and an image-forming material comprising the decomposable metal compound. The exposed photosensitive layer may be developed by heating, by exposure to electromagnetic radiation or by merely prolonging the initial exposure to an image pattern of activating radiation. Examples of suitable image forming materials are metal complexes such as silver EDTA.

3,794,497

## PHOTOGRAPHIC ELEMENT COMPRISING AN OLEFINICALLY UNSATURATED MONOMER AND A PHOTO-LABILE ORGANO COBALT COMPOUND

John Macdonald Pratt, Whitegate, and Brian Ronald David Whitear, Ilford, England, assignors to Imperial Chemical Industries Limited, London, and Ilford Limited, Ilford, England

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,207
Claims priority, application Great Britain, Oct. 24, 1969, 52,246/69
Int. Cl. G03c *1/00, 1/64, 1/68*
U.S. Cl. 96—115 P 1 Claim

This application describes a process for recording an image which comprises subjecting to image-wise light exposure a layer comprising a photo-labile organo metallic compound so as to produce an image-wise distribution of one or more active species in said layer, the said photo-labile organo metallic compound being a photo-labile cobalt or iron complex of a specified formula.

3,794,498

## DOUBLE PEAK SENSITIZATION OF SENSITIZING DYES FOR PHOTOGRAPHIC SILVER HALIDE EMULSIONS IN LIPOPHILIC SYSTEMS

Shi-Kuang Yao, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation of abandoned application Ser. No. 875,079, Nov. 10, 1969. This application Feb. 14, 1972, Ser. No. 226,211
Int. Cl. G03c *1/14*
U.S. Cl. 96—124 46 Claims

The double peak sensitization of photographic emulsions by particular cyanine dyes is disclosed. The double peak sensitization is achieved by the use of a combination of compatible dyes. The combination includes a symmetrical carbocyanine dye derived from a benzimidazole which carries in the 5-position a trifluoromethyl group and is substittued on one of the nitrogen atoms by a lower alkyl carboxy group or by a sulfoalkyl group. The second dye in the combination is selected from one of two groups. The first group of dyes are the selena-pseudocyanines. The second group of dyes are carbocyanines in which one of the nuclei is a benzimidazole and the other a benzothiazole or a benzoxazole.

3,794,499

## ARTIFICIAL FEED FOR DOMESTIC SILKWORMS

Minoru Shirota, Tetsuo Fukuda, and Mayumi Ogata, Kyoto, and Hiromi Yamada, Uji, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, and Hiromi Yamada, Uji, Japan

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,035
Claims priority, application Japan, Dec. 24, 1970, 45/116,747
Int. Cl. A23k *1/18*
U.S. Cl. 426—210 2 Claims

The disclosed feed includes a known artificial feed containing a powder of mulberry leaf and a unicellular green alga such as a chlorella or scenedesmus in an amount of at least 30% based upon the total weight of the feed.

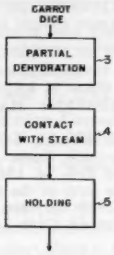
3,794,500

## DEACTIVATION OF INNER CORE ENZYMES BY RETAINED BLANCHING HEAT

Melvin E. Lazar, Oakland, Calif., and Daryl B. Lund, Madison, Wis., assignors to the United States of America as represented by the Secretary of Agriculture

Filed Mar. 31, 1971, Ser. No. 129,736
Int. Cl. A23l *1/00*
U.S. Cl. 426—511 5 Claims

Enzyme inactivation procedures, particularly applicable to fruits and vegetables, which provide important benefits, including: Decreased exudate from the material under treatment, better maintenance of texture, flavor, and color of the material, and more efficient use of equipment. Example: Carrot dice are dehydrated to a weight loss of 5–15%, then contacted with steam for a brief period of time, and finally held under adiabatic conditions to permit heat to be transferred from outer portions of the dice to inner portions thereof.




3,794,501

## MARINE ANTIFOULING PAINTS

Emanuel H. De Nio, Garden City, N.Y., assignor to Woolsey Marine Industries, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 195,839, Nov. 4, 1971. This application July 7, 1972, Ser. No. 269,677
Int. Cl. C09d *5/14, 5/16*
U.S. Cl. 106—15 AF 2 Claims

A novel paint composition, highly effective against encrustation of marine underwater structures, is herein presented. Basically, there is herein described a novel paint composition having the dual properties of being highly resistant to marine fouling organisms and the accumulation of slime, consisting essentially of a non-volatile organic vehicle, cuprous oxide, tri-n-butyltin fluoride and a polyethylene polymer.

3,794,502

## GLASS FOR CATHODE-RAY TUBES FOR TELEVISION DISPLAY

Coenraad Maria La Grouw, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 651,119, July 5, 1967. This application Feb. 17, 1971, Ser. No. 116,251
Claims priority, application Netherlands, July 9, 1966, 6609666
Int. Cl. C03c *3/04*
U.S. Cl. 106—52 1 Claim

A glass especially suitable for the window of a cathode-ray tube for displaying color television images which is substantially opaque to X-radiation, non-discoloring under electron bombardment, and which can withstand high sealing temperatures. This glass contains in addition to silica, barium and calcium oxide, sodium and potassium oxides, arsenic and antimony oxides, and cerium oxide. The amounts of barium and potassium oxides are such as to insure that this glass has a suitable coefficient of expansion and temperature differences between its softening point and annealing point.

3,794,503

## HOLLOW SPHERES CONSISTING OF ALKALI METAL SILICATE AND A POLYSALT

David I. Netting, Springfield, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Filed May 12, 1972, Ser. No. 252,763
Int. Cl. C08h *17/02*
U.S. Cl. 106—288 B 11 Claims

The invention relates to a process for the manufacture of an economical filler of low bulk density that is es-

pecially useful for incorporation in unsaturated polyester systems and which does not react with the components of the unsaturated polyester system. Solutions of sodium silicate and inorganic polysalts are mixed, spray dried, and the product from the spray drier is then further dried to a water content below about 7%.

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**3,794,504**

**FAST SETTING, CRACK RESISTANT CEMENTITIOUS COMPOSITION HAVING INHIBITED SHRINKAGE**

**Henry Nash Babcock, 4 Quintard Ave., Greenwich, Conn. 06830**

**No Drawing. Filed Feb. 24, 1969, Ser. No. 801,781**
**The portion of the term of the patent subsequent to Aug. 4, 1990, has been disclaimed**
**Int. Cl. C04b *7/02***
**U.S. Cl. 106—87** **11 Claims**

A cementitious composition suitable for repairing highway and being capable of developing sufficent strength to withstand normal traffic in less than two hours is prepared from a hydraulic cement mixture with a chemical analysis of $SO_3$ less than about 2.0% by weight of the cement in which a sufficient amount of fluid coke to offset the shrinkage during setting and early hardening are mixed therewith. The early strength of the resultant patch can be further improved by the addition therein and mixed therewith up to 100% by weight of the cement, a pressure-calcined gypsum. The addition of pressure-calcined gypsum to the composition also substantially reduced the long-term shrinkage of the resultant patch.

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**3,794,505**

**METHOD OF PRODUCING CALCIUM SILICATE HYDRATE INSULATION MATERIAL DEVOID OF ASBESTOS**

**Jerry L. Helser, Hebron, and Richard F. Shannon, Lancaster, Ohio, assignors to Owens-Corning Fiberglas Corporation**

**No Drawing. Filed Apr. 28, 1972, Ser. No. 248,376**
**Int. Cl. C04b *1/00***
**U.S. Cl. 106—119** **8 Claims**

A dispersion of reactive CaO and reactive $SiO_2$ ingredients are mixed with water into a dispersion stabilized by stable dispersion producing cellulose fibers having an average diameter of less than approximately ten microns, and from 0.30 to 2% by weight of total solids of an aluminum hydroxide gel forming material. The dispersion is heated to a temperature between 180 and 210° F. for more than ½ hour to cause some of the silica to be dissolved and reacted with the CaO into a hydrated calcium silicate gel having a CaO to $SiO_2$ ratio of approximately 2.0. The gel dispersion is thereafter steam autoclaved for a sufficient amount of time to solubilize substantially all of the remaining $SiO_2$ and to convert the calcium silicate gel into a calcium silicate hydrate which is stable above 600° F. and which has an $SiO_2$ to CaO ratio of approximately 0.95 or more.

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**3,794,506**

**CEMENTITIOUS COMPOSITIONS CONTAINING PHOSPHONIC ACID**

**Donald L. Schmidt, Midland, Ronald H. Cooper, Clare, and Gerald H. Brandt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.**

**No Drawing. Filed Oct. 2, 1972, Ser. No. 294,330**
**Int. Cl. C04b *7/02, 7/34***
**U.S. Cl. 106—90** **11 Claims**

An improved cementitious composition curable by hydration and having enhanced properties, such as less water absorbency, decreased spalling or greater strength retention, comprises a cementitious material and a small but effective amount of a phosphonic or phosphinic acid or soluble salt thereof containing various hydrophobic substituents.

**3,794,507**

**MODIFIED ALKALI METAL HEXATITANATE AND PROCESS OF PRODUCING SAME**

**Gerhard Winter and Manfred Mansmann, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed Sept. 26, 1972, Ser. No. 292,443**
**Claims priority, application Germany, Sept. 29, 1971, P 21 48 600.0**
**Int. Cl. C09c *1/36***
**U.S. Cl. 106—299** **19 Claims**

Fibrous modified alkali metal hexatitanates characterized by a content of polyvalent metal ions in an amount of from 0 to 10% by weight of polyvalent metal and by a content of phosphate and/or arsenate ions in an amount of from 0.02 to 5% by weight of $P_2O_5$ and/or $As_2O_5$, based on the weight of titanium dioxide in the alkali metal hexatitanate, and process of producing the same by reacting a titanium compound with an alkali metal compound which reacts basically, in the presence of a mineralizer at a temperature of from 700 to 1200° C. and in the presence of phosphates and/or arsenates in an amount of from 0.5 to 10% by weight, based on the weight of the dry reaction mixture, and the utility thereof as pigments, insulating materials, catalysts and catalyst supports.

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**3,794,508**

**MODIFIED ALKALI HEXATITANATE AND PROCESS OF PRODUCING SAME**

**Gerhard Winter and Manfred Mansmann, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed Sept. 29, 1972, Ser. No. 293,658**
**Claims priority, application Germany, Sept. 29, 1971, P 21 48 599.4**
**Int. Cl. C09c *1/36***
**U.S. Cl. 106—299** **15 Claims**

Modified fibrous alkali metal hexatitanates characterized by a content of polyvalent metal ions in an amount of from 0.025 to 30% by weight of metal and by a content of fluorine ions in an amount of from 0.05 to 10% by weight of fluorine, based on the weight of titanium dioxide in the alkali metal hexatitanate, and process of producing same by reacting a titanium compound with an alkali metal compound which reacts basically in the presence of a mineralizer at a temperature of from 700 to 1200° C. and in the presence of a polyvalent metal fluoride in an amount of 0.1 to 15% by weight, based on the weight of the dry reaction mixture, and the utility thereof as pigments, insulating materials, catalysts and catalyst supports.

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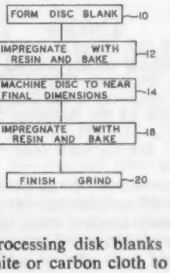
**3,794,509**

**CARBON DISK PROCESSING TECHNIQUE TO RETARD OXIDATION**

**Ronald L. Trauger, Tallmadge, and Robert L. Zarembka, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Filed June 29, 1971, Ser. No. 157,954**
**Int. Cl. B44d *1/20***
**U.S. Cl. 117—4** **6 Claims**




A method of processing disk blanks made from resin impregnated graphite or carbon cloth to improve the oxi-

dation resistance of the end product. The disk blanks are processed by resin impregnation and baking and machined to almost the final desired configuration and subsequently subjected to further resin impregnation and bake cycles to form a hard residue on the exposed surfaces of the disk blanks. The disks are then ground to size with the residue remaining on all but the wear surfaces thereof.

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3,794,510

## ELECTRON BEAM MASKING METHOD

**Luciano C. Scala, Murrysville, and David F. Ciliberti, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**No Drawing. Filed Jan. 21, 1972, Ser. No. 219,881**

**Int. Cl. B44d *1/50*; C08f *3/16***

**U.S. Cl. 117—8** **19 Claims**

A method of masking a substrate by coating the substrate with a diene-derived linear polymer having at least one active hydrogen for every ten repeating units, insolubilizing the polymer by exposing it to an electron beam, and removing the unexposed portions of the polymer coating. Specifically, a substrate of $SiO_2$ on a silicon chip may be masked from an HF etchant by applying a benzene solution of 1,2-syndiotactic polybutadiene or a random copolymer of styrene and butadiene to the substrate. The solution is spun to dryness and the resulting polymeric layer is exposed to an electron beam which traces desired patterns on the polymeric layer. The chip is then washed in benzene and etched in HF.

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3,794,511

## COATING PROCESS FOR A SUPERALLOY ARTICLE

**Sanford Baranow, Woodbridge, Conn., assignor to Avco Corporation, Stratford, Conn.**

**No Drawing. Continuation of abandoned application Ser. No. 686,852, Nov. 30, 1967. This application Oct. 22, 1971, Ser. No. 191,819**

**Int. Cl. C23c *9/02***

**U.S. Cl. 117—22** **5 Claims**

The coating of nickel- and cobalt-base alloy articles to improve both thermal fatigue and sulfidation resistance of said articles. The coating is applied by pack cementation in an inert or non-reactive atmosphere or in a vacuum, using as a pack powder an alloy of aluminum and one or more rare earth elements.

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3,794,512

## PRODUCT FOR THE FORMATION OF FLUORESCENT IMAGES

**Thomas Harland Brownlee, Westport, and Ken Matsuda, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.**

**No Drawing. Original application Aug. 8, 1969, Ser. No. 848,686, now Patent No. 3,683,336. Divided and this application Jan. 27, 1972, Ser. No. 221,471**

**Int. Cl. B44d *1/24, 1/40***

**U.S. Cl. 117—33.5 R** **4 Claims**

Product for processing information which comprises a substrate having incorporated therewith endoperoxide derivatives of polycyclic aromatic compounds which do not fluoresce, but which may be converted to fluorescent compounds by the action of heat or short wave ultraviolet radiation, and recoverted to the original non-fluorescent form by longer wavelength ultraviolet radiation.

3,794,513

## PROCESS OF APPLYING A POLYMERIC ADHESIVE LAYER BETWEEN A PHOTOCHROMIC SPIROPYRAN COMPOUND CONTAINING LAYER AND A POLYESTER FILM SUPPORT

**Werner Krafft, Leverkusen, and Peter Kruck, Cologne-Flittard, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed Apr. 12, 1972, Ser. No. 243,413**

**Claims priority, application Germany, Apr. 14, 1971, P 21 18 021.2**

**Int. Cl. B44d *1/092*; G03c *1/00, 1/80***

**U.S. Cl. 117—34** **1 Claim**

In a photochromic material containing on a polyester film support photochromic spiropyrans incorporated in poly(meth)acrylate binders, there is an adhesive layer arranged between the photochromic layer and the support, which adhesive layer consists of copolymers of vinyl chloride and vinyl acetate which may be partly saponified, and/or poly(meth)acrylic acid esters of aliphatic or cycloaliphatic alcohols having 1 to 8 carbon atoms. The adhesive layer is applied to the film support from an organic solvent containing chloral hydrate or chloral methylate as swelling agent, and this layer is dried at between 60° C. and 90° C.

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3,794,514

## COATED COMPOSITE METAL PART

**Harold J. Michael, Columbus, Ohio, assignor to Rockwell International Corporation**

**No Drawing. Original application Nov. 27, 1970, Ser. No. 93,493, now Patent No. 3,702,770, dated Nov. 14, 1972. Divided and this application Mar. 3, 1972, Ser. No. 231,769**

**Int. Cl. C23c *7/00***

**U.S. Cl. 117—46 FS** **4 Claims**

A coated composite metal part comprised of two or more metallic components each having a fused-on cermet protective coating and a metallic weld area joining the components is provided with a novel flame-sprayed protective coating over portions of the fused-on cermet coating and over the adjoining weld area to develop improved metal part resistance to surface corrosion attack.

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3,794,515

## SARAN COATING OF CELLULOSIC CASING

**Albin F. Turbak and Henry J. Rose, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.**

**No Drawing. Filed Apr. 3, 1968, Ser. No. 718,343**

**Int. Cl. B32b *23/08***

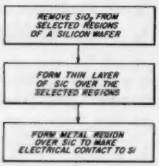
**U.S. Cl. 117—145** **9 Claims**

An oxygen- and water vapor impermeable food casing is prepared by coating a regenerated cellulose or fiber reinforced regenerated cellulose food casing with a coating composition comprising a saran, a plasticizer, a polymeric polyisocyanate, an activator, such as a polyol or reaction product of a polyol with ethlene oxide or the like, and a solvent system comprising a high boiling solvent, such as buytrolactone, and a low boiling solvent such as methyl ethyl ketone or tetrahydrofuran. The coated casing is heated to dry and cure the coating thereon. The coating composition is self-priming and forms a more adherent coating having an oxygen- and vapor permeability less than about 1.0 cc./100 in.$^2$/24 hr.-atm.

3,794,516
**METHOD FOR MAKING HIGH TEMPERATURE LOW OHMIC CONTACT TO SILICON**

William E. Engeler, 88 St. Stephens Lane W., Scotia, N.Y. 12302, and Linus F. Cordes, 1145 Godfrey Lane, Schenectady, N.Y. 12309

Original application Dec. 15, 1970, Ser. No. 98,266, now Patent No. 3,714,520. Divided and this application Dec. 17, 1971, Ser. No. 209,400
Int. Cl. B44d *1/14, 1/18*
U.S. Cl. 117—217 3 Claims


REMOVE SiO2 FROM SELECTED REGIONS OF A SILICON WAFER
FORM THIN LAYER OF SiC OVER THE SELECTED REGIONS
FORM METAL REGION OVER SiC TO MAKE ELECTRICAL CONTACT TO Si

A high temperature low ohmic electrical contact is made to a silicon body by forming a very thin layer of silicon carbide over the silicon body and then forming a metallic layer, such as a refractory metal, over the silicon carbide to form a high quality low ohmic contact to the surface of the silicon body.

3,794,517
**ELECTRIC CIRCUIT ELEMENTS AND METHODS OF MANUFACTURING SUCH ELEMENTS**

Jean Michel Baudry Ghislain Yperman, Sint-Stevens-Woluwe, and Charles Belhomme, Evere, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

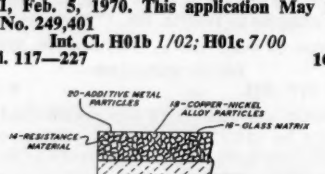
No Drawing. Continuation of abandoned application Ser. No. 601,342, Dec. 13, 1966. This application Dec. 28, 1971, Ser. No. 213,176
Claims priority, application Netherlands, Dec. 15, 1965, 6516296
Int. Cl. H01l *1/14*
U.S. Cl. 117—217 3 Claims

A method is shown for increasing the stability of the electrical resistance of n-type semiconductor bodies provided with ohmic contact electrodes. The method comprises first vacuum depositing chromium on the semiconductor body and then vacuum depositing a solderable metal on the chromium layer. This abstract is in no way intended to be a description of the invention defined by the claims.

3,794,518
**ELECTRICAL RESISTANCE MATERIAL AND METHOD OF MAKING THE SAME**

Robert Gene Howell, Boone, N.C., assignor to TRW, Inc., Cleveland, Ohio

Continuation-in-part of abandoned application Ser. No. 8,941, Feb. 5, 1970. This application May 1, 1972, Ser. No. 249,401
Int. Cl. H01b *1/02*; H01c *7/00*
U.S. Cl. 117—227 16 Claims

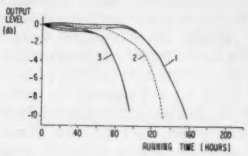



An electrical resistance material comprising a mixture of a glass frit and finely divided particles of an alloy of copper and nickel. The resistance material may also include finely divided particles of an additional metal having a positive temperature coefficient of resistance and which may readily oxidize at high temperatures. The resistance material is adapted to be applied to and fixed on a substrate to form an electrical resistor which will readily fuse or open when subjected to an overload to prevent excessive overheating of the resistor.

3,794,519
**PROCESS FOR THE PRODUCTION OF A MAGNETIC RECORD MEMBER**

Goro Akashi, Masaaki Fujiyama, Akira Kasuga, Yasuyuki Yamada, Osamu Suzuki, Matsuaki Nakamura, Kenji Sega, and Hiroshi Kato, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1970, Ser. No. 86,924
Claims priority, application Japan, Nov. 4, 1969, 44/88,272
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 6 Claims




A method for preparing a magnetic record member free from sulfate ($SO_4^{--}$) and chloride ($Cl^-$) ions, which comprises: (a) reacting an iron salt to form goethite powder, (b) heating said goethite, thus converting it to magnetite or γ-hematite, (c) washing the resulting matter of (b) with an aqueous solvent to remove any water-soluble impurities therefrom, (d) dispersing the purified product so obtained in a solution of film-forming resin and (e) applying said dispersion to a suitable backing receptive to a magnetic recording layer, and the product so obtained.

3,794,520
**NONREACTIVE REFRACTORY SEPARATING COATINGS FOR ELECTRICAL STEELS**

Norman M. Pavlik, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 22,683, Mar. 25, 1970, which is a division of application Ser. No. 681,026, Nov. 6, 1967, now Patent No. 3,523,837. This application Mar. 30, 1972, Ser. No. 239,755
Int. Cl. H01f *1/04*
U.S. Cl. 117—230 3 Claims

An aqueous slurry comprising about 60% by weight of $Al_2O_3$, based on the weight of the water, and small amounts of polyvinyl alcohol and an organic suspending agent (more particularly, a cellulosic suspending agent), is applied to electrical sheet steel and dried thereon to provide a relatively thin and uniform separating coating. A plurality of such coated sheets may be stacked or a single such sheet may be coiled for final annealing at elevated temperature.

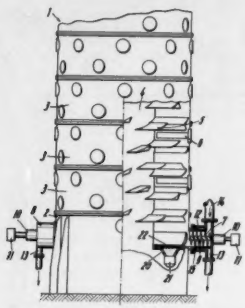
3,794,521
**DIFFUSION TOWER**

Walter Dietzel and Siegfried Matusch, Braunschweig, Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Jan. 10, 1972, Ser. No. 216,496
Claims priority, application Germany, Feb. 11, 1971, P 21 06 464.2; Jan. 15, 1971, G 71 01 390.6
Int. Cl. C13d *1/12*
U.S. Cl. 127—5 8 Claims

A diffusion tower for the extraction of juices from sugar beet cossettes is provided at its lower end with sieve

or screen worm means which are supported in respective housings at one end thereof so as to reach with its free, overhang end toward an opening in the tower whereby the tower facing turn of the screen worm means keeps the



cossettes in the tower and permits the escape of the juice. Each housing comprises a sieve or screen area, preferably a cylindrical sieve surrounding the screen worm proper. At least one of the worms is provided with a solid wing for the infeed of the sugar beet cossettes into the tower.

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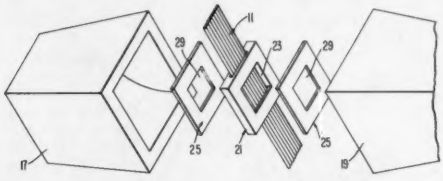
**3,794,522**
**STRIPPING INSULATED WIRE**

**Harry B. Mueller, Westchester, and Gilbert R. Reid, Norristown, Pa., assignors to Burroughs Corporation, Detroit, Mich.**

**Continuation of abandoned application Ser. No. 803,567, Mar. 3, 1969. This application Jan. 24, 1972, Ser. No. 220,146**

**Int. Cl. B08b** *7/02, 7/04, 11/00*

**U.S. Cl. 134—1** **2 Claims**



Method and apparatus for stripping insulation from a conductive wire using clean thermal energy. A jig and mask positioned between two thermal energy sources expose only that portion of the insulation to be removed. A portion of insulation adjacent to the exposed wire is cut and slid over the previously exposed wire. The wire thus exposed is free of contamination and thermal distortion.

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**3,794,523**
**SCALE REMOVAL**

**James L. Thompson, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.**

**No Drawing. Filed July 8, 1971, Ser. No. 160,882**

**Int. Cl. B08b** *9/08;* **C23g** *1/02*

**U.S. Cl. 134—3** **6 Claims**

An aromatic solvent in aqueous acid solution emulsion is provided which is useful for treating materials which are normally solubilized by said acid but which are occluded, e.g. coated, with an organic deposit.

**3,794,524**
**STRIPPING METHOD**

**Andrew Nogueira, Cincinnati, and Harry J. Packer, Dayton, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio**

**No Drawing. Continuation of abandoned application Ser. No. 49,206, June 23, 1970. This application Nov. 21, 1972, Ser. No. 308,610**

**Int. Cl. B08b** *5/00;* **C09d** *9/00*

**U.S. Cl. 134—31** **1 Claim**

Method for stripping resin-base deposits and similar coatings from a substrate which includes contacting vapor evolved from a boiling azeotropic mixture with the substrate disposed deposit. The present method is particularly useful for stripping durable resin-base paint adhered to a metal substrate in the form of coatings and other deposits.

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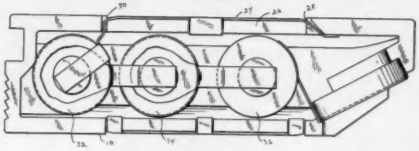
**3,794,525**
**BATTERY ASSEMBLY**

**Gordon E. Kaye, 140 N. Broadway, Irvington, N.Y. 10533**

**Filed Apr. 12, 1972, Ser. No. 243,387**

**Int. Cl. H01m** *1/02*

**U.S. Cl. 136—108** **1 Claim**



A two-part molded cartridge utilizes one part as an assembly tray or shell for assembling one or more electric cells in position to permit electrical interconnections between the cells, and to support contact terminal surfaces for connection to external circuit contact terminals, and then utilizes the second molded part as a cover, and the two parts are then sealed to constitute a housing for the cells as a battery unit.

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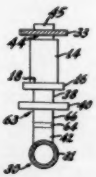
**3,794,526**
**THERMOELECTRIC GENERATOR**

**Nicholas E. Pryslak, Summit, N.J., assignor to the United States of America as represented by the United States Atomic Energy Commission**

**Filed Apr. 21, 1967, Ser. No. 634,805**

**Int. Cl. H01v** *1/04*

**U.S. Cl. 136—205** **1 Claim**



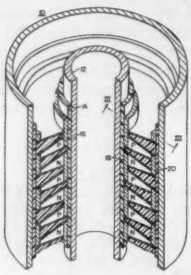
A thermoelectric generator having a rigid coupling or "stack" between the heat source and the hot strap joining the thermoelements. The stack includes a member of an insulating material, such as ceramic, for electrically isolating the thermoelements from the heat source, and a pair of members of a ductile material, such as gold, one each on each side of the insulating member, to absorb thermal differential expansion stresses in the stack.

3,794,527

## THERMOELECTRIC CONVERTER

Chang-Kyo Kim, McMurray, Pa., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 15, 1970, Ser. No. 3,183
Int. Cl. H01v *1/32*
U.S. Cl. 136—208 5 Claims



This invention relates in general to thermoelectric units and more particularly to a tubular thermoelectric unit which includes an array of tandemly arranged radially tapered annular thermoelectric pellets having insulation material of a lower density than the thermoelectric pellets positioned between each pellet.

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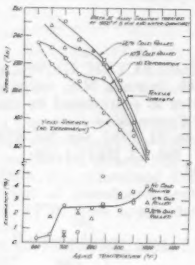
3,794,528

## THERMOMECHANICAL METHOD OF FORMING HIGH-STRENGTH BETA-TITANIUM ALLOYS

Louis A. Rosales, Manhattan Beach, Alfred W. Sommer, Los Angeles, and Kanji Ono, Granada Hills, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Aug. 17, 1972, Ser. No. 281,593
Int. Cl. C22f *1/18*
U.S. Cl. 148—12.7 8 Claims



Beta-titanium alloys containing a relatively large fraction of a beta-phase stabilizer are thermomechanically treated to provide increased strength levels of greater than 220 k.s.i. with only a minimum loss of ductility, the treatments involving heating the stock a point near its beta-transus, rapid cooling, cold rolling and aging, the last step including either a single final aging at a temperature in the alpha-forming temperature range or a multi-step aging process which includes pre-aging in the omega-forming range prior to the final aging. Cold rolling plus final aging improves strength and ductility, while cold-rolling plus multi-step aging is very effective from a transformation time viewpoint, reducing the aging time needed to obtain the optimum strength levels by factors of 10–100 over single aging.

3,794,529

## METHOD OF MAKING A METAL LAMINATE

Donald R. Thompson, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,479
Int. Cl. C23f *7/08*
U.S. Cl. 148—6.15 R 5 Claims

A method of preparing a metal polyurethane laminate by phosphetizing the metal, drying the metal to a water free surface and applying a coating of a soybean alkyd paint or a modified linseed alkyd paint, baking at 225–375° F. until tack-free and applying a polyurethane reaction mixture, and solidifying the said mixture to give a laminate.

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3,794,530

## HIGH-PERMEABILITY Ni-Fe-Ta ALLOY FOR MAGNETIC RECORDING-REPRODUCING HEADS

Hakaru Masumoto, Sendai, Yuetsu Murakami, Izumi-machi, and Masakatsu Hinai, Natori, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

Filed Sept. 19, 1972, Ser. No. 290,424
Claims priority, application Japan, Oct. 13, 1971, 46/80,207
Int. Cl. C04b *35/00*; H01f *1/00*
U.S. Cl. 148—31.55 1 Claim

A magnetic recording and reproducing heads having a high permeability and high hardness, consisting of 60.2 to 85.0 wt. percent of nickel, 6.0 to 30.0 wt. percent of iron and 3.1 to 23.0 wt. percent of tantalum as the main ingredient, and a total amount of 0.01 to 10.0 wt. percent of at least one element selected from the group consisting of 0 to 7.0 wt. percent of molybdenum, 0 to 5.0 wt. percent of chromium, 0 to 10.0 wt. percent of tungsten, 0 to 7.0 wt. percent of vanadium, 0 to 3.1 wt. percent of niobium, 0 to 10.0 wt. percent of manganese, 0 to 7.0 wt. percent of germanium, 0 to 5.0 wt. percent of titanium, 0 to 5.0 wt. percent of zirconium, 0 to 5.0 wt. percent of aluminum, 0 to 5.0 wt. percent of silicon, 0 to 5.0 wt. percent of tin, 0 to 5.0 wt. percent of antimony, 0 to 10.0 wt. percent of cobalt and 0 to 10.0 wt. percent of copper as the subingredient, and an inevitable amount of impurities, characterized in that the alloy has the degree of order of 0.1 to 0.6, the Vickers hardness of more than 150, the initial permeability of more than 3,000 and maximum permeability of more than 5,000, and a method of manufacturing a magnetic recording and reproducing head having a high permeability, by heating said alloy articles at a temperature above 800° C. but lower than the melting point in a non-oxidizing atmosphere or in vacuo for at least more than 1 minute but not longer than 100 hours depending upon the composition, and cooling from a temperature of more than order-disorder transformation point to a room temperature at a suitable speed depending upon the composition so as to provide the degree of order of 0.1 to 0.6 and the Vickers hardness of more than 150.

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3,794,531

## METHOD OF USING A HIGHLY STABLE ALUMINUM ALLOY IN THE PRODUCTION OF RECRYSTALLIZATION HARDENED PRODUCTS

Manfred Markworth and Friedrich Wilhelm Lynker, Meinerzhagen, and Wilhelm Rosenkranz, deceased, late of Meinerzhagen, Germany, by Barbara Rosenkranz, legal representative, Meinerzhagen, Germany, assignors to Firma Otto Fuchs, Meinerzhagen, Postfach, West Germany

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,517
Claims priority, application Germany, Oct. 23, 1970, P 20 52 000.7
Int. Cl. C22f *1/04*
U.S. Cl. 148—159 6 Claims

A method of using a highly stable aluminum alloy of the AlZnMgCu type consisting essentially of 1.1 to 1.3% copper, 2.3 to 2.7% magnesium, 5.7 to 7.1% zinc, 0.2 to

0.5% silver, 0 to 0.09% manganese, 0.02 to 0.05% titanium, 0.002 to 0.006% boron, and 0.04 to 0.08% chromium in combination with 0.10 to 0.16% zirconium, as material for producing recrystallization-hardened semi-finished corrosion resistant products by subjecting the alloy to a solution treatment, and thereafter to low-rate cooling.

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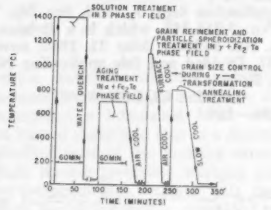
**3,794,532**
**SPHERODIZATION OF GRAIN BOUNDARY PRECIPITATES**
**Russell H. Jones, Pittsburgh, Pa., and Earl R. Parker, Oakland, and Victor F. Zackay, Berkeley, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission**
**Filed Mar. 14, 1972, Ser. No. 234,483**
**Int. Cl. C22c** *39/14, 41/02*
**U.S. Cl. 148—142** **8 Claims**




A method for spheroidizing grain boundary precipitates by cycling through the alpha-gamma phase transformation, wherein both the ductility and strength of the material are increased. The inventive spheroidization process is applicable to the binary system, such as Fe-Ta. In addition, it has been discovered that the addition of selected amounts of chromium on the Fe-Ta binary system (Fe-Ta-Cr alloy) enhanced spheroidization as well as improved oxidation resistance, while lowering the heat treatment temperature.

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**3,794,533**
**METHOD FOR DIFFUSING Zn INTO A III–V COMPOUND SEMICONDUCTOR CRYSTAL THROUGH ALUMINA MASKING**
**Eiichi Adachi, Tokyo, and Kazutoshi Saito, Hachioji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan**
**Filed May 19, 1972, Ser. No. 255,084**
**Claims priority, application Japan, May 19, 1971, 46/33,248; June 1, 1971, 46/37,484**
**Int. Cl. H01l** *7/36, 7/44*
**U.S. Cl. 148—175** **14 Claims**

An $Al_2O_3$ film is formed on a surface of a substrate of a III–V compound semiconductor, and Zn is diffused through said $Al_2O_3$ film into said semiconductor as an impurity, whereby a higher impurity concentration is obtained than is obtained by diffusing Zn through an $SiO_2$ film under the same conditions. In the diffusion at the same temperature and for the same period of time, the diffusion depth of Zn depends on the thickness of the $Al_2O_3$ film. At a temperature at which the diffusion of Zn occurs through the $Al_2O_3$ film, Zn does not diffuse through an $Si_3N_4$ film. Isolation and p-n junctions may accordingly be simultaneously provided in such way that an n-type layer is grown on a p-type substrate; thin $Al_2O_3$ films are provided where p-type diffusion layers, to form the pn junctions conjointly with the n-type layer, are disposed, without providing the film at portions at which the isolations are disposed; while a diffusion mask of silicon nitride is provided at the latter parts, and Zn diffusion is carried out.

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**3,794,534**
**NITROMETHANE EXPLOSIVE WITH A FOAM AND MICROSPHERES OF AIR**
**O. Wayne Chandler, Terre Haute, Ind., assignor to Commercial Solvents Corporation**
**No Drawing. Filed Feb. 20, 1973, Ser. No. 333,845**
**Int. Cl. C09b** *7/00*
**U.S. Cl. 149—2** **2 Claims**

A primer adapted to initiating detonation of nitromethane by strong shock comprising an open-celled polymeric foam containing about 15–85% by weight of glass bubbles.

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**3,794,535**
**PYROTECHNIC LACQUER**
**Yves H Bertrand, Robert E. Grebert, and Jean P. Paquet, Saint Medard en Jalles, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France**
**Filed July 14, 1972, Ser. No. 271,803**
**Claims priority, application France, July 19, 1971, 7126285**
**Int. Cl. C06b** *19/02*
**U.S. Cl. 149—3** **7 Claims**

Lacquers comprising a dispersion of a pyrotechnic composition in a collodion, which are useful in forming ignition coatings on blocks of propellant and gas generators. The pyrotechnic compositions may be alumino-thermal powders, thermites, black powders or zirconium/barium chromate/ammonium perchlorate/ammonium bichromate, and the collodion may be a nitrocellulose or nitroglycerine powders (or mixtures of the two), or a plastics material, in solution in solvent.

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**3,794,536**
**DIELECTRIC CIRCUIT FORMING PROCESS**
**Willis Martin Muska, Sea Bright, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.**
**Filed Jan. 31, 1972, Ser. No. 222,010**
**Int. Cl. B29c** *17/08;* **H01l** *7/50*
**U.S. Cl. 156—11** **1 Claim**

There is disclosed a process for forming integrated optical circuit components on a substrate wafer in the form of dielectric thin films in patterns of high resolution and edge smoothness. For high resolution, the use of electron-resist and electron-beam exposure techniques is described. Particularly disclosed is the use of a manganese mask formed over the circuit layer, the exposed portions of which are sputter etched away.

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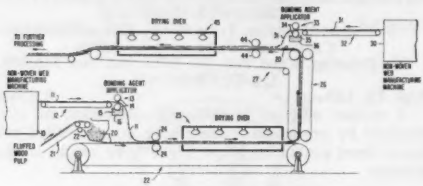
**3,794,537**
**METHOD OF MAKING ABSORBENT PADS**
**Donald Wilber Rahmes, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.**
**Continuation of abandoned application Ser. No. 31,509, Apr. 24, 1970. This application Mar. 21, 1972, Ser. No. 236,795**
**Int. Cl. B32b** *3/26*
**U.S. Cl. 156—62.8** **12 Claims**

A method of making an absorbent pad comprising the steps of applying a bonding agent to a non-woven fiber

web, depositing the non-woven web on one side of a layer of absorbent material, and curing the bonding agent to bond the non-woven web to the absorbent material. A



three-ply pad can be made by similarly bonding a second non-woven fiber web to the other side of the absorbent material layer.

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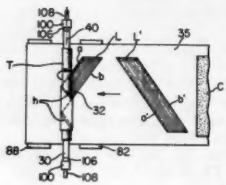
**3,794,538**
**METHOD OF MAKING A ROLLING LOBE DIAPHRAGM**

**Christopher E. Christie, James R. Fedor, and Ishmael S. Harwell, Akron, and Robert S. Riggs, Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**

**Original application July 13, 1970, Ser. No. 54,420, now Patent No. 3,666,598. Divided and this application Mar. 3, 1972, Ser. No. 231,707**
**Int. Cl. B65c *3/12*; B65h *11/02***
**U.S. Cl. 156—187** **7 Claims**



A method of fabricating a cord reinforced sleeve comprising mounting a tube of uncured curable rubbery material on a rigid cylindrical mandrel, placing a band of precut cord material upon a carrier in the form of an endless movable belt so that the cords of such band are oriented parallel to a line which makes an acute angle with the longitudinal axis of the mandrel so that relative movement between the band on the carrier and the tube on the mandrel in a direction circumferentially of the mandrel wind the band helically about the mandrel a plurality of times and place the respective edges of the band in mutually adhesive contact along a helix coaxial with the tube on the mandrel.

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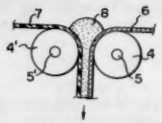
**3,794,539**
**MANUFACTURE OF ELECTROPHOTOGRAPHIC PLATES**

**Takao Komiya and Umi Tosaka, Tokyo, Takashi Ihara, Kawasaki, Takehiko Matsuo, Tokyo, and Katsunobu Ohara, Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan**

**Original application Sept. 12, 1967, Ser. No. 667,257, now Patent No. 3,687,659. Divided and this application Dec. 16, 1971, Ser. No. 208,809**
**Claims priority, application Japan, Sept. 22, 1966, 41/62,655; Nov. 21, 1966, 41/76,477**
**Int. Cl. C09j *5/00*; G03g *5/04***
**U.S. Cl. 156—309** **5 Claims**

Photosensitive plates are produced by depositing a solvent-free mixture of photoconductive material dispersed in a liquid polymerizable resin between a conductive layer and a translucent insulative layer and thereafter polym-



erizing the liquid resin to form a solid photoconductive layer integrally bonded to the conductive and translucent insulative layers.

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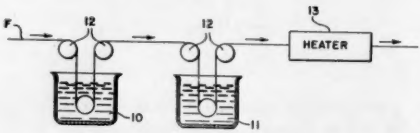
**3,794,540**
**METHOD OF MAKING FILAMENT STRAND WOUND PRODUCT**

**James R. Griffith, Riverdale Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy**

**Original application Sept. 9, 1970, Ser. No. 70,808, now Patent No. 3,711,351, which is a division of application Ser. No. 643,321, May 31, 1967, now Patent No. 3,544,421. Divided and this application Nov. 3, 1972, Ser. No. 305,752**
**Int. Cl. B65h *81/02***
**U.S. Cl. 156—169** **1 Claim**




Glass filaments are continuously drawn through a solution of bifunctional acyl chloride in organic solvent and then directly through a solution of alkylene diamine and an acid acceptor in water. The filaments are dried, coated with epoxy resin and wound to form a structural laminate.

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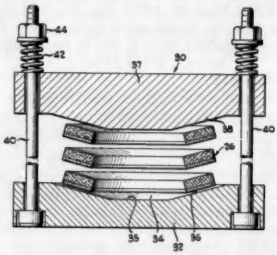
**3,794,541**
**METHOD OF MAKING FLAT CLUTCH PLATES**

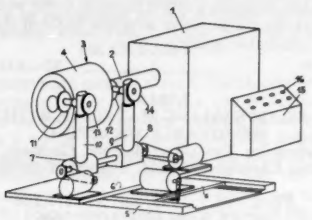
**Walter J. Schissler, Oak Forest, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.**

**Filed Nov. 26, 1971, Ser. No. 202,284**
**Int. Cl. B32b *31/02***
**U.S. Cl. 156—228** **7 Claims**



D'sclosed is a method of producing composite type, flat clutch discs which consists of deforming the clutch disc assembly during heat treating in such a way that the internal stresses developed during said heat treatment will be countered by the stresses induced by the deformation such that the finished product attains the desired flat condition.

3,794,542
**STITCHING APPARATUS FOR TIRE DRUM BUILDING MACHINES**
**Bruno Colombani and Antonio Pacciarini, Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy**
**Filed Sept. 15, 1971, Ser. No. 180,819**
**Claims priority, application Italy, Sept. 18, 1970, 29,899/70**
**Int. Cl. B29h** *17/08, 17/18*
**U.S. Cl. 156—358** **4 Claims**



The invention comprises stitching apparatus for tire building machines provided with a building drum which apparatus comprises a horizontal base; two carriages which can be moved along said base in a direction parallel to the longitudinal axis of the building drum by a first actuator means having reversible working sense and in the direction perpendicular to said axis by a second actuator means having reversible direction; two vertical columns each of which is integral at one end with one of said carriages and is connected at the other end to at least one stitching disc, the axis of rotation of the stitching disc lying in a plane containing the axis of rotation of the building drum; means for driving the axis of rotation of each stitching disc toward one of two angularly spaced extreme positions; and elastic means for elastically rotating in said plane the axis of rotation of each stitching disc; said apparatus additionally comprising means for changing the speed and direction of movement of said carriages, including an embodiment wherein their movements are mutually dependent; and embodiments wherein the extreme positions of the axis of rotation of each stitching disc are spaced apart at angles greater than about 180° and smaller than about 360°; embodiments wherein the elastic means are able to selectively rotate the axis of rotation of each stitching disc; and embodiments including programmer control means for controlling the actuators and elastic means so that their operations take place in a pre-established sequence.

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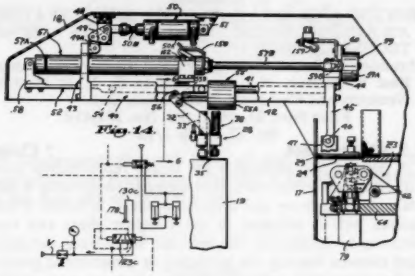
3,794,543
**APPARATUS FOR TRANSFERRING AND AFFIXING ARTICLES TO EITHER ONE OF TWO ANGULARLY DISPOSED SURFACES**
**Jaime A. Bonomi, Waltham, Mass., assignor to Tapeler Corporation, Newton, Mass.**
**Filed Dec. 3, 1971, Ser. No. 204,542**
**Int. Cl. B65c** *9/08*
**U.S. Cl. 156—566** **25 Claims**

Apparatus is disclosed for use in conjunction with dispensers providing, at a station, an article having adhesive on its undersurface in condition to anchor the article to the selected one of two angularly disposed surfaces. The apparatus has a head, adjustable for article applications to either surface and provided with means operable to pick up the article at the station and release it when positioned against the selected surface. The apparatus has means, disclosed as pneumatically operated, to move the head to and from the station into a position proximate to the selected surface, operate the pick-up means at the station, press the article against the selected surface and release it and return the head to pick up another article. In practice, the starting point of the cycle, triggered by the presentation of the selected surface in a predetermined position, is characterized by the head, with an article held thereby, being proximate to the selected surface.



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3,794,544
**PROCESS FOR PRINTING LEATHER**
**Peter Eckert, Magden, Willi Egli, Reinach, Basel-Land, and Hans Georg Osolin, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland**
**No Drawing. Filed Feb. 10, 1971, Ser. No. 114,399**
**Claims priority, application Switzerland, Feb. 18, 1970, 2,329/70**
**Int. Cl. B44c** *1/24*
**U.S. Cl. 156—230** **14 Claims**

The invention relates to a process for printing natural or synthetic leather, wherein the surface to be printed is brought into contact with a temporary carrier of paper, aluminum or regenerated cellulose, comprising a transferable film of vinyl resin and one or more pigments, and an underlying layer of ethyl cellulose, or of a mixture of nitrocellulose and an aminoplast, and that the temporary carrier is separated from the ultimate carrier.

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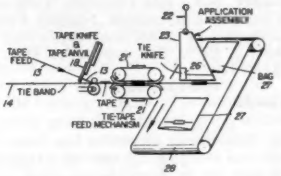
3,794,545
**TIE-BAND APPLICATOR APPARATUS**
**Paul Adrian Lucas, Webster, N.Y., assignor to Mobil Oil Corporation**
**Filed Feb. 10, 1972, Ser. No. 225,131**
**Int. Cl. B32b** *31/00*
**U.S. Cl. 156—519** **1 Claim**




An apparatus for applying a closure device to the exterior surface of a bag-like object, the closure being capable of ready detachment from the bag so that the closure may be employed to effect sealing of an open mouth bag structure. The apparatus includes a device for feeding a closure element, the element may be either coated with a pressure sensitive adhesive or have affixed thereto a length of adhesive tape, into the proximity of a

bag structure which is advancing on a conveyor device. The closure, with the adhesive strip thereon, is subsequently applied to the exterior wall of the bag surface by means of a reciprocating applicator assembly.

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3,794,546

**PROCESS AND APPARATUS FOR DELAMINATING AN ADHERENT RECEPTOR SHEET ON A SENSITIZED ELEMENT**

**Abraham B. Cohen, Springfield, and Herbert A. Tobias, East Brunswick, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Nov. 23, 1971, Ser. No. 201,414**
**Int. Cl. B32b** *3/12*
**U.S. Cl. 136—344** **7 Claims**

A process and apparatus for image reproduction using a discrete laminated sensitized element comprising a substrate, a resist layer and a receptor sheet, in which a continuous web is adhered to the receptor sheet and then taken up to delaminate the receptor sheet from the sensitized element leaving the hardened or unhardened portion of the resist layer adhering to the substrate as a positive or negative reproduction of the image and the complementary unhardened or hardened image adhering to the receptor sheet.

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**ERRATUM**

For Class 156—189 see:
Patent No. 3,794,708

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3,794,547

**POLYAMIDE FILMS**

**Mutsuo Kuga, Kyoto, Takeshi Mashimo, Uji, and Motohiro Tsuruta, Kyoto, Japan, assignors to Unitika Kabushiki Kaisha, Amagasaki, Japan**

**Continuation-in-part of abandoned application Ser. No. 878,076, Nov. 19, 1969, which is a continuation-in-part of application Ser. No. 734,212, June 4, 1968, now Patent No. 3,502,766, which in turn is a continuation-in-part of abandoned application Ser. No. 536,481, Jan. 24, 1966. This application Dec. 6, 1971, Ser. No. 205,161**
**Claims priority, application Japan, Jan. 28, 1965, 40/4,857; Feb. 25, 1965, 40/10,484; Dec. 29, 1967, 43/85,026**
**Int. Cl. B32b** *27/16*
**U.S. Cl. 161—1** **4 Claims**

This invention relates to very thin polyamide films having high purity and transparency, high tensile strength, and other improved properties.

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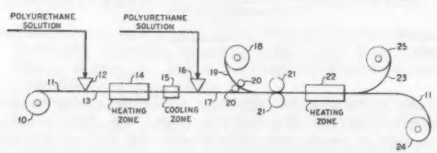
3,794,548

**METHOD OF INTRODUCING BREATHABILITY TO A NON-POROUS CONTINUOUS PLASTIC FILM**

**Christian Wirth, Mount Holly, N.J., and George J. Albi, Far Rockaway, N.Y.; said Christian Wirth assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.**

**Continuation-in-part of abandoned application Ser. No. 25,122, Apr. 2, 1970. This application Dec. 27, 1971, Ser. No. 212,041**
**Int. Cl. B32b** *3/00*
**U.S. Cl. 161—89** **17 Claims**




A porous, breathable, polymer film is produced by forming a substantially non-porous continuous polymer film on a support member, applying a layer of film-forming polymer composition to said non-porous film; and heating the resulting structure above the softening point of the non-porous film to form a unitary, porous breathable article comprised of both polymer layers. The first polymer film can be formed by applying to the support member a layer of a first film-forming flexible polyurethane solution comprising a polyurethane composition and diluent therefor. The support member can be stripped from the first polymer film. Coated fabrics can also be produced by applying a fabric material to the second layer before heating the resulting structure to form the unitary porous, breathable article.

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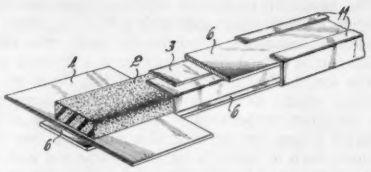
3,794,549

**FOAM SEALING MATERIAL WITH REMOVABLE WRAPPING**

**Georg Schroteler, Dusseldorf-Benrath, Germany, assignor to Firma Chemiefac GmbH, Dusseldorf-Reisholz, Germany**

**Filed Aug. 9, 1972, Ser. No. 279,226**
**Int. Cl. B32b** *3/26, 5/18, 7/06*
**U.S. Cl. 161—43** **10 Claims**



A foam strip sealing material impregnated with an adhesive having long lasting plastic properties capable of retention of the foam strip material in a compressed state prior to its use in combination with a wrapping means removably surrounding the compressed foam strip material and which has a first layer of silicon paper having a silicon coating on both of its sides, a rigid outer cover of non-sticking synthetic material into which the foam strip with the silicon paper thereon is slidably and removably inserted.

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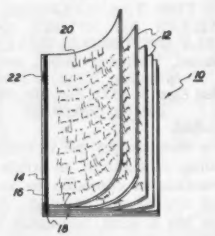
3,794,550

**SHEET BINDING**

**Gordon P. Taillie, Rochester, N.Y., assignor to Standard Oil Company, Chicago, Ill.**

**Filed Aug. 25, 1972, Ser. No. 283,676**
**Int. Cl. B32b** *3/00, 7/14*
**U.S. Cl. 161—147** **18 Claims**



Sheet binding where the printing medium itself is the sheet binder. In a xerographic process, high density areas

of the toner are provided at desired binding areas. These toner binding areas may then be subsequently refused between adjacent overlaying sheets to provide bound stacks without requiring any separate or additional binding materials.

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3,794,551

## PRECOMPRESSED CERAMIC FOR LIGHT ARMOR

**Richard L. Landingham, Livermore, and Carl F. Cline, Walnut Creek, Calif., assignors to the United States of America as represented by the Secretary of the Army**

**No Drawing. Filed Feb. 7, 1972, Ser. No. 224,243**
**Int. Cl. B32b *5/12***
**U.S. Cl. 161—58** **4 Claims**

A precompressed ceramic sheet material suitable for use in light personal armor applications, and processes for the formation thereof. A fine wire metallic network is embedded in a matrix of ceramic material and heated to an elevated temperature. Upon cooling, the thermal contraction differences between the fine wire and the ceramic matrix compressively stresses the ceramic matrix to greatly increase the fracture resistance and strength of the ceramic sheet material.

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3,794,552

## LAMINATING MATERIALS FOR LOW PRESSURE LAMINATES, METHOD OF MAKING SAME, AND LAMINATES THEREOF

**Robert L. Schmidt, St. Charles, Ill., assignor to Riverside Laboratories, Inc., Geneva, Ill.**

**No Drawing. Filed July 12, 1971, Ser. No. 161,896**
**Int. Cl. B32b *27/10***
**U.S. Cl. 161—232** **25 Claims**

This invention relates to improved laminating materials, especially saturating paper, containing diacetone acrylamide, or an analogue or methylolated derivative thereof (DAA), which are especially useful in the production of low-pressure laminated structures as exemplified by low-pressure polyester laminates. The improved laminating materials, e.g., saturating paper, are characterized by a high degree of water-resistance imparted to low-pressure laminates embodying the same, as well as by ease and uniformity of saturation with the laminating resin and by uniformity of color of the ultimate laminate as well as the laminating material, e.g., the saturating paper itself. The disclosure also relates to corresponding resin-saturated laminating materials ("prepregs"), a method of making such improved laminating materials, and laminates thereof having such superior water-resistance.

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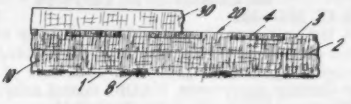
3,794,553

## VARICOLORED ORNAMENTALLY DESIGNED NEEDLED NON-WOVEN FABRICS

**Herbert Lochner, Kempen, Germany, assignor to Cikalon-Vliesstoffwerk G.m.b.H., Kempen-Niederrhine, Germany**

**Continuation-in-part of application Ser. No. 3,976, Jan. 14, 1970, now Patent No. 3,705,064. This application Feb. 29, 1972, Ser. No. 230,368**
**Claims priority, application Germany, Jan. 15, 1969, P 19 01 753.9**
**Int. Cl. B32b *7/08, 7/14***
**U.S. Cl. 161—148** **4 Claims**

A needled, ornamentally patterned non-woven pile fabric is disclosed. The fabric comprises a first needled non-woven web having a face side and a rear side, said first needled web being of a single color or of blended color and a second needled non-woven web situated on the rear side of said first web and having a color contrasting from the color of said first web, said second web having glued areas and unglued areas with the contours of the glued areas corresponding to a desired pattern. The first and second non-woven webs are needled together with fibers of the unglued areas of said second web penetrating through said first web to form a pile on the face side of said first web while fibers of the glued areas of said second



web are intermingled with fibers of said first web without substantial pile formation, whereby a pattern is formed on the face side of said first web.

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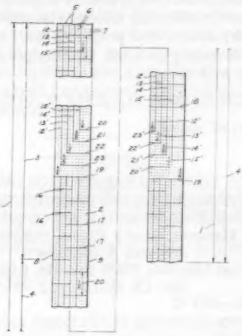
3,794,554

## SEWING TAPE

**Alfred B. Caring, Oceanside, N.Y., assignor to Belding Heminway Company, Inc., New York, N.Y.**

**Filed June 19, 1972, Ser. No. 263,799**
**Int. Cl. B32b *3/10***
**U.S. Cl. 161—109** **3 Claims**



The sewing tape consists of a strip of thin flexible material having adhesive material on one surface thereof and a plurality of longitudinally extending lines of perforations. The lines are spaced 1/16" apart and the perforations in each of the lines are spaced 1/16" apart and in registration with the perforations in the other lines so that the perforations form both longitudinal and transverse lines spaced 1/16" apart on the tape. Certain of the longitudinal lines of perforations are marked with longitudinal guide lines spaced given distances greater than 1/16" apart, and certain of the transverse lines of perforations are marked with transverse guide lines spaced given distances greater than 1/16" apart and extending in alternate fashion from opposite edges of the tape for distances less than the width of the tape. Each repeat length of the tape is composed of two sections having body portions similarly marked as aforesaid, and having end portions provided with guide lines forming continuations of said longitudinal guide lines, but of varying lengths and terminating in transverse guide lines extending to a longitudinal edge of the tape; such transverse lines in one end portion extending to one longitudinal tape edge and the transverse lines in the other end portion extending to the other longitudinal tape edge.

3,794,555
**GLASS-EPOXY LAMINATES FOR HIGH TEMPERATURE USE**
**Zal N. Sanjana, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**
**Filed Nov. 16, 1971, Ser. No. 199,167**
**Int. Cl. B32b** *27/38;* **C09j** *3/14*
**U.S. Cl. 161—185** **9 Claims**

A laminate is made comprising a plurality of bonded layers of sheet material impregnated with a cured resinous composition, comprising a cured admixture of a liquid low viscosity epoxy resin, NADIC methyl anhydride and benzophenone-tetracarboxylic dianhydride.

3,794,556
**PRIMER COMPOSITION FOR ADHERING SILICONE ELASTOMER TO SUBSTRATES**
**Donald G. Young, Glendale, Ky., assignor to Dow Corning Corporation, Midland, Mich.**
**No Drawing. Application Dec. 30, 1970, Ser. No. 103,004, now Patent No. 3,671,483, which is a continuation-in-part of abandoned application Ser. No. 30,346, Apr. 20, 1970. Divided and this application Jan. 31, 1972, Ser. No. 222,401**
**Int. Cl. B32b** *25/20*
**U.S. Cl. 161—206** **2 Claims**

A mixture of tetraalkoxysilane or partial hydrolyzate thereof, a tetraalkyltitanate, a compound of the formula $CF_3CH_2CH_2Si[OSi(CH_3)_2X]_3$ where X is a hydrogen atom or $—CH_2CH_2Si(OOCCH_3)_3$ and at least one X is a $—CH_2CH_2Si(OOCCH_3)_3$ and an organic solvent is useful as a primer in adhering silicone elastomer to substrates such as epoxy resins and polyurethane. An example of the primer is one part each of ethylpolysilicate, tetrabutyltitanate and

$$CF_3CH_2CH_2Si[OSi(CH_3)_2CH_2CH_2Si(OOCCH_3)_3]_3$$

and ten parts of acetone.

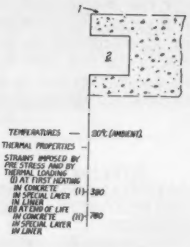
3,794,557
**METHOD OF MAKING ISOTROPIC FIBROUS WEBS CONTAINING TEXTILE LENGTH FIBERS**
**Carlyle Harmon, Scotch Plains, N.J., assignor to Johnson & Johnson**
**Filed Mar. 26, 1969, Ser. No. 810,573**
**Int. Cl. D21h** *5/12*
**U.S. Cl. 162—157 C** **1 Claim**

Fibrous webs containing textile length rayon fibers which are substantially straight and unidirectional and have few, if any, portions which sharply reverse in direction, said fibers having a denier of less than about 3 and preferably about 1½ or 1 and a length of at least about ½ inch and preferably at least about ¾ inch or 1 inch, said fibrous webs being made by adding said textile length rayon fibers to aqueous media containing a synthetic, extremely high molecular weight, linear polymeric, water soluble, hydrophilic dispersing agent to form an aqueous fiber slurry, and forming a fibrous web from said aqueous fiber slurry on paper making equipment, said fibrous webs being isotropic and possessing excellent uniformity insofar as density and appearance are concerned, and well suited for further processing into nonwoven fabrics having excellent tear resistance and tensile strength.

3,794,558
**LOADING OF PAPER FURNISHES WITH GELATINIZABLE MATERIAL**
**Sangho E. Back, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.**
**Filed June 19, 1969, Ser. No. 834,790**
**Int. Cl. D21d** *3/28*
**U.S. Cl. 162—175** **14 Claims**

A method of preparing a paper pulp is disclosed where an uncooked starch or starch derivative is added to a cellulosic fiber pulp and the pulp is further refined at a temperature above the gelatinizing temperature of the starch additive so that the starch additive is gelatinized in situ in the refiner. A method of making paper products from the treated pulp is also disclosed.

3,794,559
**PRESSURE VESSELS**
**Ivor Llewellyn Davies, High Wycombe, and Reginald Edwin Downton Burrow, London, England, assignors to Taylor Woodrow Construction Limited, Middlesex, England**
**Filed July 27, 1971, Ser. No. 166,351**
**Claims priority, application Great Britain, July 29, 1970, 36,797/70**
**Int. Cl. G21c** *13/08*
**U.S. Cl. 176—87** **6 Claims**




A concrete pressure vessel having a lined cavity for hot, chemically aggressive liquid disposed within a cooling jacket with a layer of material of high thermal conductivity between the cavity liner and the cooling jacket, the jacket and high thermally conductive layer serving to maintain the temperature of the cavity liner within closely controlled limits and the maximum temperature of the main body of the vessel at an acceptable level, and the jacket and the conductive layer also serving to prevent leakage of liquid from the cavity.

3,794,560
**FUEL SPHERE PILE REACTOR**
**Franz Rohr, Lange Zeile 64, Erlangen, Germany**
**Filed Nov. 24, 1971, Ser. No. 201,580**
**Claims priority, application Germany, Nov. 26, 1970, P 20 58 158.2**
**Int. Cl. G21c** *3/04*
**U.S. Cl. 176—81** **1 Claim**

Fuel sphere pile reactor including a pile of nuclear fuel elements each formed of a spherical first container wherein nuclear fuel is received, each of the fuel elements being received in a second container having at least an outer spherical shape and having an inner volume greater than the volume of the first container, the second container being formed with perforations for admitting coolant to the interior of the second container to be received therein in addition to the first container.

3,794,561
**BIOLOGICALLY ACTIVE PEPTIDE AND METHOD OF PREPARING THE SAME**
**Hidehiko Matsukawa, % Tsukasa Sasaki, 139 Suwamachi; Haruo Ito, 1–4 Misumicho; and Taneko Suzuki, 18–13, 7-chome, Nishi Shinjuku, all of Tokyo, Japan**
**Filed Apr. 3, 1972, Ser. No. 240,485**
**Claims priority, application Japan, Sept. 30, 1971, 46/76,596, 46/76,597, 46/76,598, 46/76,599, 46/76,600**
**Int. Cl. C12d** *1/00*
**U.S. Cl. 195—29 R** **8 Claims**

The novel biologically active peptide valuable as an adjuvant for various medicaments and cosmetics as well

as an additive for medicated wines and other edible products is prepared from the skeletal muscles or visceral muscles of the animals of the family Cervoidea such as *Rangifer tarandus* by decomposing the raw materials into low molecular weight peptides with a protease and collecting the active water-soluble portions therefrom by means of a molecular sieve or an ion-exchange resin.

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**3,794,562**

## PROCESS FOR THE ENRICHMENT OF PROTEINS USING POLYETHYLENE-IMINE

**Hans Ulrich Bergmeyer and Gotthilf Naher, Tutzing, Upper Bavaria, Gunter Weimann, Percha, Upper Bavaria, and Waldemar Thum, Tutzing-Unterzeismering, Germany, assignors to Boehringer Mannheim G.m.b.H**

**No Drawing. Continuation of application Ser. No. 101,158, Dec. 23, 1970. This application Nov. 13, 1972, Ser. No. 306,124**

**Claims priority, application Germany, Jan. 16, 1970, P 20 01 902.7**

**Int. Cl. C07g *7/02***

**U.S. Cl. 195—66 R** **12 Claims**

Dissolved proteins are enriched by use of polyethyleneimine, in enrichment processes such as precipitation, purification and fractionation of proteins.

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**3,794,563**

## PREPARATION OF IMMOBILIZED ENZYMES

**Sidney Alan Barker and John Frederick Kennedy, Birmingham, and John Epton, Stourbridge, England, assignors to Aspro-Nicholas Limited, Slough, Buckinghamshire, England**

**No Drawing. Filed Aug. 18, 1972, Ser. No. 281,854**

**Claims priority, application Great Britain, Sept. 1, 1971, 40,859/71; Nov. 17, 1971, 53,320/71**

**Int. Cl. C07g *7/02***

**U.S. Cl. 195—63** **9 Claims**

Biologically active proteins are supported on polymers having chelating sites defined by pairs of adjacent hydroxy and carboxylic acid groups. Preferred polymers are poly-N-acryloyl-aminosalicylic acids. The protein can be complexed with the polymer by mixing together in aqueous media.

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**3,794,564**

## PROCESS FOR THE PRODUCTION OF ANTICAPSIN

**David H. Lively, Ramesh M. Shah, and John G. Whitney, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Continuation-in-part of abandoned application Ser. No. 782,980, Dec. 11, 1968. This application Dec. 29, 1969, Ser. No. 888,878**

**Int. Cl. C12d *9/00***

**U.S. Cl. 195—80 R** **3 Claims**

Anticapsin is an antibiotic having antibacterial and anticapsular activity, which inhibits the synthesis of hyaluronic acid, and which is useful as a potentiating agent for certain antibiotics. Anticapsin is produced by the fermentation of *Streptomyces griseoplanus*.

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**3,794,565**

## APPARATUS FOR PROCESSING HEAT-DECOMPOSABLE NON-GASEOUS MATERIALS

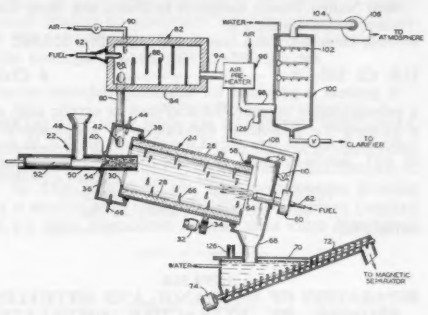
**Edward T. Bielski, 9362 Hazelridge, Sappington, Mo. 63126; Daryl L. Lackey, 18 Glen Cove Drive, Chesterfield, Mo. 63017; and Russell V. Theiss, 1071 Ferngate Lane, St. Louis, Mo. 63141**

**Continuation-in-part of abandoned application Ser. No. 54,495, July 13, 1970. This application Dec. 22, 1971, Ser. No. 210,655**

**Int. Cl. C10b *21/00, 49/02***

**U.S. Cl. 202—100** **18 Claims**

Method and apparatus for processing heat decomposable liquids or solid materials, such as industrial and municipal wastes, wherein the materials are heated directly by convection and preferably also by radiation from an open flame to effect pyrolysis. Means are disclosed for assisting in the transfer by conduction of additional heat energy to the materials being processed, and to effect combustion of a portion of the decomposition gases produced by pyrolysis as the decomposition gases are formed. A separate chamber is provided for complete oxidation of decomposition gases which are not oxidized as formed. Also disclosed is a system for handling quench, washer, and spray tower liquids to avoid any liquid waste being discharged to the sewer and to avoid the formation of a steam plume from the apparatus.

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**3,794,566**

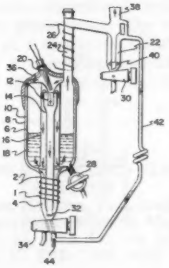
## VAPOR-LIQUID EQUILIBRIUM STILL

**Johan D. Raal, Kingston, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada**

**Filed Oct. 28, 1971, Ser. No. 193,531**

**Int. Cl. B01d *3/42***

**U.S. Cl. 202—160** **6 Claims**



In a vapor-liquid equilibrium still, heated liquid and vapor is conveyed from a heating chamber upwardly, in the manner of a Cottrell pump, around an inner equilibrium chamber to a heated liquid trap above the inner equilibrium chamber. Vapor from the heated liquid trap is bubbled through liquid in the inner equilibrium chamber, whilst liquid from the heated liquid trap is returned to the heating chamber. The heated liquid and vapor conveyed upwardly around the inner equilibrium chamber

provides a thermal envelope therearound and ensures truly adiabatic conditions in the inner equilibrium chamber.

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3,794,567

**STABILIZATION OF UNSATURATED ACIDS BY DISTILLATION WITH A COMBINED POLYMERIZATION INHIBITOR**

**Susumu Otsuki, Kyoichi Hori, and Isao Miyanohara, Shin Nanyo, Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.**

**No Drawing. Filed Jan. 6, 1972, Ser. No. 215,902**
**Int. Cl. C07c *57/04*; B01d *3/00***
**U.S. Cl. 203—8** **6 Claims**

A process is provided for inhibiting polymerization of a polymerizable unsaturated acid such as acrylic acid, and a process for stabilizing distillation of a polymerizable unsaturated acid such as acrylic acid, using a combination of polymerization inhibitors, i.e., benzoquinone and hydroquinone monomethyl ether and preferably with air (or oxygen) present in specified amounts. The process is also useful with other acids such as methacrylic acid.

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3,794,568

**SEPARATION OF METHANOL AND METHYLENE BROMIDE BY EXTRACTIVE DISTILLATION WITH ETHYLENE BROMIDE**

**George A. Daniels and James A. Wingate, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.**

**Filed Aug. 28, 1972, Ser. No. 284,262**
**Int. Cl. B01d *3/40***
**U.S. Cl. 203—67** **2 Claims**

Methylene bromide and methanol form an azeotrope upon distillation. However, they can be separated by extractive distillation in the presence of ethylene dibromide.

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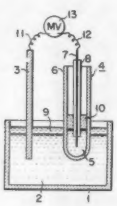
3,794,569

**METHOD FOR QUICK QUANTITATIVE ANALYSIS OF THE CONTENT OF METALLIC ALUMINIUM IN A BATH OF MOLTEN METALS**

**Yoshihiko Kawai, Yokohama, and Mutsumi Ihida, Tokyo, Japan, assignors to Nippon-Kokan Kabushiki Kaisha, Tokyo, Japan**

**Filed Mar. 23, 1973, Ser. No. 344,286**
**Claims priority, application Japan, Apr. 31, 1972, 47/32,473**
**Int. Cl. G01n *27/46***
**U.S. Cl. 204—1 T** **5 Claims**




The above-mentioned method which comprises dipping the lower end portion of a nonmeltable electrode rod as one single electrode in a bath of molten metal containing metallic aluminium; dipping in said bath as the other single electrode the lower end portion of a standard electrode device having a solid electrolyte of aluminium used as an operating medium; determining at the known bath temperature the potential difference between both single electrodes constituting a concentration cell having aluminium ions used as an operating medium; and immediately finding the percentage content of metallic aluminium in said bath by reference to a calibration graph prepared by operating the same type of concentration cell as described above containing the different known concentrations of aluminium under the same conditions each time.

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3,794,570

**ELECTROPLATING CHROMIUM WITH A NON-CONSUMABLE CHROME PLATING ANODE**

**Howard Manko, Teaneck, and James Langan, Bayonne, N.J., assignors to Alpha Metals, Inc., Hudson County, N.J.**

**No Drawing. Filed Aug. 11, 1972, Ser. No. 279,947**
**Int. Cl. C23b *5/06***
**U.S. Cl. 204—51** **4 Claims**

A non-consumable chrome plating anode which is an anode shaped lead body, with not less than 20 p.p.m. calcium and up to approximately 3% tin alloyed with the lead.

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3,794,571

**REGENERATION OF FERRIC CHLORIDE COPPER ETCHING SOLUTIONS**

**Stanley J. Beyer and Robert M. Lukes, Louisville, Ky., assignors to General Electric Company**

**No Drawing. Filed May 10, 1971, Ser. No. 142,065**
**Int. Cl. C22d *1/16*; C01g *47/10***
**U.S. Cl. 204—94** **3 Claims**

Electrolytic regeneration of ferric chloride copper etch solutions under electrolytic and concentration conditions effecting formation of chlorine atoms at the anode for oxidation of ferrous ions in the solution to ferric ions.

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3,794,572

**PROCESS FOR COATING STEEL**

**Hidehisa Yamagishi and Hiroshi Takano, Kawasaki, Japan (both % Nippon Kokan Kabushiki Kaisha Technical Institute, 2730 Minamiwataridachio, Kawasaki-shi, Kanagawa-ken, Japan)**

**No Drawing. Filed June 1, 1970, Ser. No. 42,505**
**Claims priority, application Japan, Apr. 28, 1967, 42/27,117**
**Int. Cl. C23b *11/02***
**U.S. Cl. 204—56 R** **10 Claims**

Process for depositing chromium hydroxide on steel is provided. A small amount of one or more of a thiosulfate, dithionite, bisulfite, sulfite, thiosulfite, pyrosulfite, sulfide, as an auxiliary agent is added to a main electrolyte solution of chromic acid and a cathode electrolytic reduction thereof is carried out in a conventional cell.

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3,794,573

**METHOD FOR THE PRODUCTION OF L-ASCORBIC ACID**

**Hideo Matsumaru, Ashiya, and Nobuyoshi Hayashi, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan**

**No Drawing. Filed May 27, 1971, Ser. No. 147,659**
**Claims priority, application Japan, June 16, 1970, 45/52,011**
**Int. Cl. B01j *1/10*; C07d *5/12***
**U.S. Cl. 204—159** **10 Claims**

Process for producing L-ascorbic acid (vitamin C) by irradiating electromagnetic waves, particularly γ-ray, to a solution containing L-sorbose and/or L-tagatose.

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3,794,574

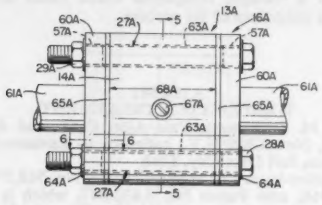
**DEVICE FOR CATHODICALLY PROTECTING METAL CONDUIT SYSTEM**

**Donald A. Fauth, Bon Air, and Ramon T. Lindberg, Richmond, Va., assignors to the United States of America as represented by the Secretary of the Interior**

**Filed Apr. 27, 1972, Ser. No. 247,988**
**Int. Cl. C23f *13/00***
**U.S. Cl. 204—197** **3 Claims**

A metal conduit system particularly adapted to flow an electrolyte therethrough is provided with a sacrificial

anode having an inside tubular surface adapted to receive the electrolyte against substantially its entire area and




such anode serves as a containment member for the electrolyte.

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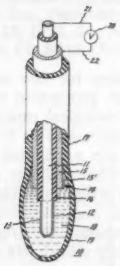
**3,794,575**
**OXYGEN SENSOR**
**Leonard W. Niedrach and Willard T. Grubb, Schenectady, N.Y., assignors to General Electric Company**
**Filed Oct. 30, 1972, Ser. No. 301,987**
**Int. Cl. G01n** *27/46*
**U.S. Cl. 204—195 P** **9 Claims**



An oxygen sensor has a first electrode of a corrodible metallic base member, a second electrode of a noble metal coupled electrically to the metal of the first electrode, a third electrode surrounding at least a portion of the metal of the first electrode, the third electrode comprising silver with at least a partial layer of silver halide thereon, a first layer of electrical insulation disposed between the first and third electrodes, a second layer of electrical insulation disposed over the third electrode, an aqueous electrolyte contacting at least a portion of the first electrode, the second electrode, and the silver halide layer of the third electrode, and an outer sheath of oxygen permeable ion-impermeable diffusion barrier material encapsulating at least the electrolyte, and the portions of the first electrode, the second electrode, and the silver halide layer of the third electrode in contact with the electrolyte.

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**3,794,576**
**EPOXIDE BLEND RADIATION SENSITIVE CATALYST PRECURSOR**
**William Russell Watt, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.**
**No Drawing. Filed May 18, 1971, Ser. No. 144,668**
**Int. Cl. C08g** *45/00*
**U.S. Cl. 204—159.11** **14 Claims**

A blend of epoxide materials is provided which, although essentially free of volatile solvents, is liquid and tractable for coating and related applications at or near room temperature. The epoxide materials include an epoxy prepolymer of the type of glycidyl-bisphenol A resins, epoxidized novolaks, polyglycidyl ethers, and alicyclic diepoxides, blended with a bis(epoxycycloalkyl) ester and in many cases also with a low viscosity monoepoxide in limited proportions. The compositions preferably include additionally a cationic polymerization initiator, preferably a radiation-sensitive catalyst precursor, and epoxide polymers are produced by coating such compositions on a substrate, followed by application of energy, through heating or preferably through irradiation, to effect substantial polymerization of the epoxidic materials of the coating.

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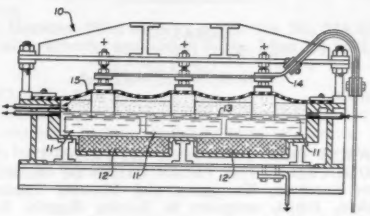
**3,794,577**
**FLEXIBLE COVER FOR AN ELECTROLYTIC CELL**
**Brian H. Oliver, Cuyahoga Falls, and Harry S. Custer, Barberton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Filed May 9, 1972, Ser. No. 251,827**
**Int. Cl. B01k** *3/00;* **C22d** *1/04*
**U.S. Cl. 204—219** **16 Claims**




A flexible fluid impermeable elastomeric cover particularly for an electrolytic chlorine cell of the mercury type. The cover is comprised of a first vulcanized rubbery polymer contacted by the hot wet chlorine gas atmosphere originating within the cell and a second vulcanized rubbery polymer resistant to the permeation of fluids, heat and high ozone concentrations which is contacted by the oxygen and ozone atmosphere originating outside the cell. The first polymer is preferably polyisoprene and the second polymer is butyl, chlorobutyl, bromobutyl rubber or chlorosulfonated polyethylene. The cover may be at least a single layer of a vulcanized blend of the first and second polymer or a composite laminate comprised of separate layers of blend and/or the first and second polymers.

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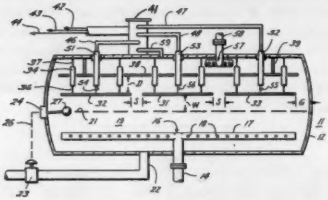
**3,794,578**
**THREE PHASE ENERGIZED ELECTRICAL TREATER**
**Frederick D. Watson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.**
**Filed Dec. 26, 1972, Ser. No. 317,914**
**Int. Cl. B03c** *5/00, 5/02*
**U.S. Cl. 204—305** **13 Claims**

An electrical field treater operating from three phase AC current for resolving a dispersion formed of a continuous oil phase containing a dispersed water phase. The treater comprises a metal vessel which includes a dispersion inlet and outlets to remove the continuous oil phase and coalesced water phase. A transformer arrangement, energized from three phase AC current, provides in three secondary windings elevated voltages for energizing three electrodes mounted in electrical isolation within the vessel. Two of the secondary windings are phased 120° apart and energize the electrodes mounted to each side of the third

electrode. The third electrode is energized by a third secondary winding which is phased 60° apart from the other two secondary windings. High tension conductors interconnect the secondary windings with the electrodes. As a result, the side positioned electrodes are energized to substantially the same potential magnitude relative to the third electrode, and all electrodes are at the same potential relative to the metal sidewalls of the vessel.



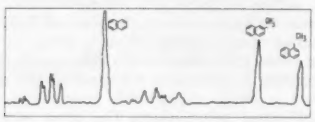
## ERRATUM

For Class 204—181 see:
Patent No. 3,794,593

## 3,794,579
## PROCESS FOR TREATING BY-PRODUCT OILS PRODUCED IN THE PRODUCTION OF OLEFINS

**Satoru Enomoto, Kanagawa, and Masaaki Takahashi, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo, Japan**

**Filed Dec. 29, 1972, Ser. No. 319,138**
**Claims priority, application Japan, Dec. 29, 1971, 47/3,584**
**Int. Cl. C10c *3/00***
**U.S. Cl. 208—40** **10 Claims**



Thermally stabilized oil fractions and pitch fractions are obtained from by-product oils in the production of olefins which comprises heating the by-product oils at 400–600° C. for 10–1200 seconds under a pressure of 20–2000 kg./cm.$^2$ to form thermally stabilized oil fractions and residue fractions and then treating the residue fractions at 300–480° C., under a pressure of from normal pressure to 50 kg./cm.$^2$ for 1–10 hours to provide useful pitch fractions.

## 3,794,580
## HYDROCRACKING PROCESS

**Peter Ladeur, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.**

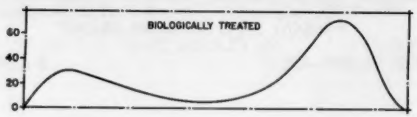
**No Drawing. Filed Feb. 26, 1973, Ser. No. 336,154**
**Claims priority, application Great Britain, Mar. 7, 1972, 10,522/72**
**Int. Cl. C10g *13/02, 37/10***
**U.S. Cl. 208—110** **8 Claims**

A catalytic hydrocracking process for producing high viscosity index lubricating oils by contacting a mixture of heavy hydrocarbons having a nitrogen content less than 3000 p.p.m.w. with a catalyst in the presence of hydrogen under hydrocracking conditions and adding to said mixture of hydrocarbons up to about 3000 p.p.m.w. of ammonia or a nitrogen compound which yields ammonia under the conditions of the process.

## 3,794,581
## WASTEWATER TREATMENT

**Mathew M. Zuckerman, Palo Alto, Calif., and Alan H. Molof, New City, N.Y., assignors to Envirotech Corporation, Salt Lake City, Utah**

**Continuation-in-part of application Ser. No. 768,378, Oct. 17, 1968, now Patent No. 3,635,817, which is a continuation-in-part of application Ser. No. 824,709, May 14, 1969, now Patent No. 3,676,334. This application Jan. 17, 1972, Ser. No. 218,254**
**Int. Cl. C02c *5/02***
**U.S. Cl. 210—9** **13 Claims**




A treatment sequence for raw wastewater of a type which includes a high proportion of a poorly sorbable material comprising biological treatment, hydrolysis and adsorption of either a physical or biological type. During biological treatment one portion of the poorly sorbable material is respired while another portion is converted into a high molecular weight material. During hydrolysis, the latter material is converted into a low molecular weight material of substantially improved sorbability in comparison to the porly adsorbable material originally in the raw wastewater.

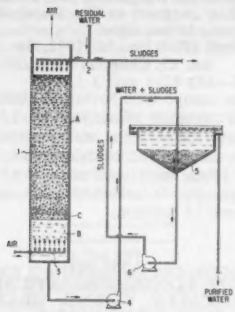
## 3,794,582
## PROCESS FOR AERATING BIOLOGICAL SUSPENSIONS

**Claude Lackme, Grenoble, Albert Digonnet, Montfleury, Louis Colas, Lyon, Jean Boutin, Mions, Jean-Pierre Dal Pont, Pont-de-Claix, and Bernard Papillon, La Mulatiere, France, assignors to Rhone-Progil, Paris, France**

**Filed Apr. 10, 1972, Ser. No. 242,394**
**Claims priority, application France, Apr. 9, 1971, 7113839**
**Int. Cl. C02c *1/04***
**U.S. Cl. 210—11** **17 Claims**

A process for introducing a gas into a suspension of microorganisms wherein a dense bed of introduced gas and liquid microorganism suspension is created in the upper zone of a treatment receptacle by counter-currently introducing a uniform dispersion of a gas at a constant rate into the base of a treatment receptacle having dispersed therein a liquid suspension containing microorganisms, which suspension is introduced at the top of said receptacle and the upper zone dense bed is separated from a less dense lower zone by an intermediate interface zone. The uppermost layer contains a greater quantity of gas than the lower layer and by continuously regulating the rate of suspension withdrawal from the receptacle there is maintained a stable densely packed bed of gas and microorganism suspension. Homogeneous distribution

of gas and the presence of a gas-rich environment resulting from the upper zone dense bed of gas and microorganisms significantly improves the efficiency of gas utilization in biological aerating systems.

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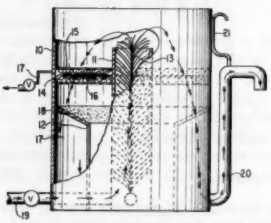
**3,794,583**
**METHOD AND APPARATUS FOR SEPARATING OIL FROM AN OIL WATER MIXTURE**
**Herbert M. Rhodes, New Orleans, La., assignor to Oil Mop, Inc., New Orleans, La.**
**Filed Aug. 28, 1972, Ser. No. 284,089**
**Int. Cl. B01d** *13/00*
**U.S. Cl. 210—23** **11 Claims**



The present disclosure is directed to a method and apparatus for separating oil from an oil and water mixture by first subjecting the mixture to passage through a chamber containing an oil mop structure made from fibrillated strips of polypropylene secured to a polypropylene line so that the oil will be attracted by the polypropylene strips and the water will pass through the mop structure and will thereafter be subjected to passage through a fabric membrane having a two percent fluorocarbon solution impregnating the fabric which will permit passage of the water through the membrane rejecting the oil and permitting the water to pass on and be drawn off separately from the oil which may likewise be drawn separately from the chamber.

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**3,794,584**
**REMOVAL OF POISONS AND DRUGS FROM BLOOD**
**Robert Kunin, Yardley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.**
**No Drawing. Filed Apr. 9, 1970, Ser. No. 27,177**
**Int. Cl. B01d** *3/00*
**U.S. Cl. 210—24** **4 Claims**

A technique is provided for the removal of poisons and/or drugs from the blood of animals. This technique includes the use of a non-ionogenic, macroreticular, cross-linked polymer or resin capable of adsorbing the toxic components from the blood.

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**3,794,585**
**LUBRICANTS COMPRISING A DIMER OR A TRIMER OF A $C_{18}$ MONOCARBOXYLIC ACID**
**Clarence Liddy, Franklinville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 114,334, Feb. 10, 1971. This application Oct. 24, 1972, Ser. No. 300,023**
**Int. Cl. C10m** *5/26, 5/28*
**U.S. Cl. 252—28** **10 Claims**

Lubricants comprising from about 8% to about 95% of a trimer or dimer of a $C_{18}$ aliphatic monocarboxylic acid or mixtures thereof and an oleophilic surface modified clay have improved retention properties as gear lubricants.

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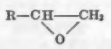
**3,794,586**
**LUBRICATING OIL COMPOSITION**
**Shoji Kimura, Chigasaki, and Noboru Ishida, Sagamihara, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan**
**No Drawing. Filed Mar. 13, 1972, Ser. No. 234,400**
**Claims priority, application Japan, Mar. 18, 1971, 46/14,891**
**Int. Cl. C10m** *1/32, 1/34*
**U.S. Cl. 252—51.5 R** **9 Claims**

A lubricating oil composition which is characterized by containing hydroxyalkyl-substituted polyamine prepared by reacting a polyolefin epoxide represented by the general formula



where R designates a branched-chain alkyl group having average molecular weight of 140 to 3000, with a polyamine selected from the group comprising alkylene-diamine, cycloalkylene-diamine, aralkyl-diamine, polyalkylene-polyamine and aromatic diamine at a temperature of 15 to 180° C.

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**3,794,587**
**SYNERGISTIC ANTISEPTIC COMPOSITIONS**
**Eric Jungermann, Chicago, Ill., assignor to Armour-Dial, Inc., Chicago, Ill.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 63,340, Aug. 12, 1970. This application Mar. 24, 1972, Ser. No. 237,910**
**Int. Cl. C11d** *3/48, 9/50*
**U.S. Cl. 252—107** **5 Claims**

Compositions possessing antibacterial activity through the effects of synergistic combinations of hexachlorophene and 2,4,4'-trichloro-5'-bromo-2'-hydroxydiphenyl ether.

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**3,794,588**
**HIGHLY-ACTIVE SUPPORTED CATALYSTS**
**Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Continuation-in-part of application Ser. No. 834,156, June 17, 1969, which is a continuation-in-part of application Ser. No. 631,884, Apr. 19, 1967, both now abandoned. This application Sept. 23, 1971, Ser. No. 183,282**
**Int. Cl. B01j** *11/06, 11/08, 11/22*
**U.S. Cl. 252—462** **11 Claims**

Highly-active supported catalysts are prepared by slurrying a finely divided form of the catalytic material in a solution of the nitrate salt of the metal of the catalytic material, applying the slurry to a support, particularly one having a smooth surface, drying and calcining. In a pre-

ferred aspect, the supported catalyst also contains interspersants to stabilize the catalyst from crystal growth at high temperatures.

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**3,794,589**
**CHEMICAL COMPOSITIONS FOR GENERAL CLEANING**
**Adolph Fishman, 940 Oak Ave., Saint Lambert, Quebec, Canada**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 153,101, June 14, 1971. This application Jan. 19, 1973, Ser. No. 325,153**
**Int. Cl. C11d** *1/14, 9/14, 9/46*
**U.S. Cl. 252—110** **8 Claims**

Soaped-based cleaning compositions for use in hard or soft water, sea water and brine are prepared by incorporation into or blending with soap minor quantities of other materials which render the natural hardness found in water harmless or even beneficial to laundering and dishwashing processes. The ratio of soap to synthetic detergent of the compositions is high to permit the cleaning effectiveness in hard or soft water, biodegradability, health hazard and non-polluting character of these compositions to be substantially that of soap when soap is used in soft water. In one embodiment of the invention the composition contains 90 to 95 percent of soap and about 5 to 10 percent of an alkyl sulfate-free higher alcohol mixture in which the free higher alcohol content of the mixture is from about 5 to 15 percent. Another embodiment provides a composition containing 76–94 parts soap, 5 to 10 parts alkyl sulfate-free higher alcohol mixture, 2 to 4 parts of another synthetic detergent surfactant, 2 to 8 parts of a sodium polyphosphate, and 2 to 12 parts of an inorganic salt.

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**3,794,590**
**NOVEL DRY CLEANING MIXTURE**
**Oliver A. Barton, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.**
**No Drawing. Filed June 29, 1971, Ser. No. 158,129**
**Int. Cl. C11d** *7/52*
**U.S. Cl. 252—170** **6 Claims**

Mixtures comprising water, tertiary amyl alcohol and tetrachlorodifluoroethane which, over substantially the entire course of their evaporation or distillation, form azeotropic non-flammable vapors containing tertiary amyl alcohol and tetrachlorodifluoroethane. These mixtures are useful in dry cleaning textile fabrics and fibers with reduced hazard of fire.

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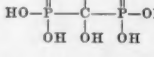
**3,794,591**
**SEQUESTERING AGENT SOLUTIONS STABILIZED WITH LITHIUM IONS**
**Jesse L. Brown, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**
**No Drawing. Filed Feb. 8, 1972, Ser. No. 224,627**
**Int. Cl. C02b** *1/00, 5/02*
**U.S. Cl. 252—178** **11 Claims**

The incorporation of small amounts of lithium ion into a solution of a heavy metal sequestering agent of the formula:



wherein R is a lower alkyl radical having from 1 to 5 carbon atoms, inhibits the formation of the white precipitate characteristically produced when sequestrants of this type are used to sequester ions of heavy metals such as calcium. Alkali metal, ammonium and ethanolamine salts of compounds of the above formula and mono and dialkyl esters thereof with methanol, ethanol, propanol and butanol also provide useful sequestering agents.

**3,794,592**
**POLYESTER COMPOSITION HAVING A CONTROL PEAK EXOTHERM WITH ISOCYANATE**
**Terence E. Winters, Mogadore, and Trent A. Sponseller, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**
**No Drawing. Filed Jan. 20, 1972, Ser. No. 219,508**
**Int. Cl. C08g** *22/40, 22/06*
**U.S Cl. 252—182** **3 Claims**

A polyester composition having an exotherm peak with 4,4'-diphenyl methane diisocyanate, 1.5 to about 5 minutes, where the polyester was prepared with a metal esterification catalyst and contains about 5 to 150 parts per million of the metal and about 5 to 150 parts per million of phosphoric acid added to said polyester to control its rate of reaction.

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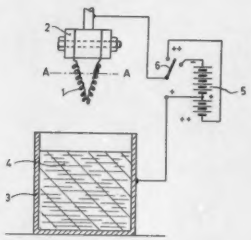
**3,794,593**
**METHOD OF ELECTROPHORETICALLY COVERING HELICALLY WOUND HEATING WIRES WITH AN INSULATING LAYER**
**Renier Gertruda Hubertus Coenen, Adrianus Kuiper, and Maria Antonius Alphonsus Andreas Collaris, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed Aug. 17, 1972, Ser. No. 281,345**
**Claims priority, application Netherlands, Aug. 18, 1971, 7111360**
**Int. Cl. B01k** *5/02;* **C23b** *13/00*
**U.S. Cl. 204—181** **1 Claim**




A helically wound V-shaped bent heating wire or bifilar-wound heating wire for an indirectly heated cathode is previously dipped in a liquid or connected anaphoretically and then covered in an electrophoresis bath with an insulating layer.

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**3,794,594**
**ELECTROSTATIC TONER**
**Shwang Hsia, New City, N.Y., assignor to Sinclair & Valentine Company, Inc., New York, N.Y.**
**No Drawing. Filed Nov. 26, 1969, Ser. No. 880,375**
**Int. Cl. G03g** *9/02*
**U.S. Cl. 252—62.1** **3 Claims**

An electrostatic toner comprising a multiplicity of pigmented resinous particles wherein the resin contains a polymerically plasticized copolymer of styrene and acrylonitrile.

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**3,794,595**
**WORKING OF NON-FERROUS METALS**
**Edwin J. Latos, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**
**No Drawing. Filed May 8, 1972, Ser. No. 251,308**
**Int. Cl. C10m** *1/20*
**U.S. Cl. 252—42.1** **10 Claims**

Utilizing a phenolic compound in which the hydroxyl is attached directly to the phenol nucleus as a lubricant in the working of non-ferrous metal.

3,794,596
**METHOD OF AND COMPOSITION FOR THE PREVENTION OF SCALE**
**Jack Franklin Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 831,219, June 6, 1969. This application Mar. 8, 1971, Ser. No. 122,127**
**Int. Cl. C10m** *3/26*
**U.S. Cl. 252—180** **13 Claims**

Method of and composition for the prevention of scale, particularly calcium sulfate scale, using a water soluble 1,2'-hydroxyethyl-2-hydrocarbyl - 2 - imidazoline wherein the hydrocarbyl group contains from about 12 to about 20 carbon atoms and salts thereof.

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3,794,597
**METHOD OF INCREASING BRIGHTNESS OF $Y_2O_2S$:Eu LUMINESCENT MATERIAL**
**Emil J. Mehalchick, Towanda, and James E. Mathers, Ulster, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.**
**No Drawing. Filed June 7, 1972, Ser. No. 260,515**
**Int. Cl. C09k** *1/14*
**U.S. Cl. 252—301.4 S** **1 Claim**

Brightness of $Y_2O_2S$:Eu can be increased, color purity improved and lesser amounts of Eu activator can be used, if the raw materials contain about 200 p.p.m. $Hg^{+2}$ during the fabrication process.

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3,794,598
**CATALYST PREPARATION METHOD**
**Walter G. Schlaffer, San Francisco, Calif., assignor to Shell Oil Company, Houston, Tex.**
**No Drawing. Filed June 21, 1972, Ser. No. 265,048**
**Int. Cl. B01j** *11/40*
**U.S. Cl. 252—455 Z** **9 Claims**

A hydroconversion catalyst including a hydrogenating metal component having an atomic number between 20 and 32 incorporated into a crystalline alumino-silicate zeolite at least partially in hydrogen (acid) form in excess of the ion-exchange capacity of the zeolite is prepared in a single reaction step by removing sufficient hydrogen ions as generated during the ion-exchange reaction to incorporate the desired amount of hydrogenating component.

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3,794,599
**METHOD OF PREPARING A CATALYST OF A GROUP VIII NOBLE METAL AND TIN**
**Frits M. Dautzenberg, Amsterdam, Netherlands, and Herman W. Kouwenhoven, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.**
**No Drawing. Filed May 15, 1972, Ser. No. 253,215**
**Claims priority, application Great Britain, May 21, 1971, 5,186/71**
**Int. Cl. B01j** *11/08*
**U.S. Cl. 252—466 PT** **8 Claims**

Catalysts containing Group VIII noble metals and tin on a carrier are prepared by depositing tin on the carrier with an aqueous inorganic salt solution having tin present in the anion.

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3,794,600
**ZEOLITE-L CATALYST PREPARATION METHOD**
**Hans U. Schutt, Lafayette, Calif., assignor to Shell Oil Company, Houston, Tex.**
**No Drawing. Filed Jan. 7, 1972, Ser. No. 216,265**
**Int. Cl. B01j** *11/40*
**U.S. Cl. 252—455 Z** **9 Claims**

A low alkali content crystalline alumino-silicate L-zeolite catalyst is prepared by (a) selecting a high silica-alumina content L-zeolite (Si/Al >3); (b) contacting the zeolite with an aqueous solution of an ammonium salt, (c) calcining at a temperature below about 600° C., (d) contacting the calcined zeolite with an aqueous ammonium salt solution containing chromate ions, (e) repeating steps (c) and (d) or (b) until the alkali metal content is reduced below about 0.35% wt. and the crystallinity loss is not greater than 20%, and (f) compositing the zeolite with hydrogenating-dehydrogenating metals of Group VI–B and/or Group VIII. The composite is an effective isomerization or hydrocracking catalyst.

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3,794,601
**ANIONIC SURFACTANT SLURRY CONTAINING DIHEXYL ETHER AS VISCOSITY REDUCER AND METHOD OF PROVIDING SAID SLURRY**
**Eugene F. Kennedy, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.**
**No Drawing. Filed Feb. 28, 1972, Ser. No. 230,132**
**Int. Cl. B01f** *17/00, 17/02, 17/12*
**U.S. Cl. 252—355** **8 Claims**

The viscosity of anionic surfactant slurries is reduced by admixing with such slurries an effective amount of dihexyl ether.

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3,794,602
**METHOD FOR IN SITU RECONDITIONING OF IRON CATALYST BED**
**Donald B. Bivens, Leo W. Patton, and John B. Wiggill, Orange, Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed May 3, 1972, Ser. No. 249,761**
**Int. Cl. B01j** *11/30;* **C07c** *85/12*
**U.S. Cl. 252—412** **3 Claims**

A method for in situ reconditioning of a particulate iron catalyst in a fixed bed to remove accumulated chloride containing contaminant and fine catalyst particles deposited in the bed which comprises passing vertically upward through the catalyst bed at a superficial velocity in the range of 0.01 to 0.9 feet per second a dilute ammonium hydroxide solution.

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3,794,603
**$ZN^{++}$-BENZOTRIAZOLE-$H_2SO_4$ CORROSION-INHIBITOR**
**Cleveland O'Neal, Jr., and Joseph A. Goetz, Toledo, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio**
**No Drawing. Filed Jan. 17, 1972, Ser. No. 218,565**
**Int. Cl. C23f** *11/10, 11/18*
**U.S. Cl. 252—389 R** **7 Claims**

Corrosion-inhibiting compositions of $Zn^{++}$ cations, benzotriazole and $H_2SO_4$, alone or in combination with other corrosion-inhibitors are disclosed. Addition of diethylenetriaminepentaacetic acid allows formulation of a corrosion-inhibiting composition having a neutral pH.

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3,794,604
**DIOLEFIN POLYMERIZATION CATALYST COMPOSITION**
**Morford C. Throckmorton, Akron, and Robert E. Mournighan, Clinton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 811,261, Mar. 27, 1969. This application Sept. 24, 1971, Ser. No. 183,661**
**Int. Cl. C08d** *1/14*
**U.S. Cl. 252—431 C** **5 Claims**

There is disclosed a process which comprises the polymerization of at least one conjugated diolefin by contacting said conjugated diolefin, under solution polymerization conditions, with a catalyst system comprising (1) a compound selected from the groups consisting of organoaluminum compounds containing at least one carbon to

aluminum bond, (2) an organometallic compound, the metal of which is selected from the class comprising metals of Group III–B of the Periodic Table having atomic numbers of 21, 39 and 57 through 71 inclusive and (3) at least one compound containing one or more halide ions, the improvement comprising preforming and aging the catalyst system with at least one conjugated diolefin in an amount which gives a mole ratio of diolefin to Group III–B metal compound ranging from 0.2/1 to about 3000/1.

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3,794,605

## BUILT DETERGENT COMPOSITION CONTAINING WHITENESS MAINTENANCE ADDITIVE

Francis L. Diehl, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed July 19, 1971, Ser. No. 164,067

Int. Cl. C11d *3/34*

U.S. Cl. 252—89 10 Claims

A built detergent composition is formulated having excellent whiteness maintenance properties. The built detergent composition has included therewithin from 0.1% to 20% of a mixture of the water-soluble salts of a cellulose sulfate ester and a copolymer of a vinyl compound and maleic anhydride. The mixture of the sulfate ester and copolymer when added to a built detergent composition improves the whiteness maintenance of fabrics washed therewith over a built detergent composition containing either component alone.

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3,794,606

## COMPOSITION OF A POLYPHENYLENE ETHER AND AN ACRYLIC RESIN MODIFIED POLYISOPRENE

James G. Bennett, Menands, N.Y., and Robert M. Summers, Arlington, Mass., assignors to General Electric Company

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,520

Int. Cl. C08c *9/14*; C08d *9/08*

U.S. Cl. 260—4 R 13 Claims

There are provided compositions comprising (a) a polyphenylene ether in combination with a styrene resin and (b) an interpolymerization product of an acrylic ester with a polyisoprene. The addition of the interpolymerized acrylic ester-polyisoprene to compositions of polyphenylene ethers and polystyrenes provides unexpected improvements in toughness in parts molded from the compositions, and in their resistance to gasoline. Such properties are improved with substantial enhancement in gloss and surface appearance.

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3,794,607

## AQUEOUS ACRYLIC RESIN ELECTRODEPOSITION COATING COMPOSITION CONTAINING A MIXTURE OF ORGANIC AMINES

Selichi Torimitsu and Masao Takahashi, Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 812,437, Apr. 1, 1969. This application Apr. 12, 1971, Ser. No. 133,330

Claims priority, application Japan, Apr. 1, 1968, 43/20,971

Int. Cl. C08f *15/40*, *45/60*

U.S. Cl. 260—29.6 TA 4 Claims

Composition containing an acrylic resin having carboxylic groups, at least one organic amine having a "lower" dissociation degree of above 6 pKb, and at least one organic amine having a "higher" dissociation degree, i.e. its pKb is less than that of the above-described organic amine by two or more, is suitable for electrodeposition coating to yield an excellent coating film.

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3,794,608

## AQUEOUS COATING COMPOSITIONS THICKENED BY A TERPOLYMER OF AN ALKENYL AROMATIC COMPOUND, AN UNSATURATED DICARBOXYLIC ACID, AND AN ETHER OF VINYL BENZYL ALCOHOL AND AN OXYALKYLATED COMPOUND

Syamalarao Evani, Robert H. Lalk, and Terry H. Fiero, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 267,569, June 29, 1972. This application May 11, 1973, Ser. No. 359,371

Int. Cl. C08f *41/02*, *47/18*

U.S. Cl. 260—29.6 RW 33 Claims

Water soluble and alkali soluble interpolymers such as styrene/maleic anhydride/nonylphenoxy (ethyleneoxy)$_{40}$ vinyl benzyl ether provide improved stability and flow and leveling properties to aqueous coating compositions containing an emulsified water insoluble vinyl addition polymer as the essential film forming component.

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3,794,609

## CHEMICAL RESISTANT EPOXY COMPOSITIONS CAPABLE OF ROOM TEMPERATURE CURING

Ignatius Metil, Buffalo, N.Y., assignor to Ameron, Inc., Brea, Calif.

No Drawing. Continuation of application Ser. No. 4,462, Jan. 19, 1970, which is a continuation of application Ser. No. 688,332, Dec. 6, 1967, both now abandoned. This application Sept. 22, 1972, Ser. No. 291,337

Int. Cl. C08g *51/34*, *51/28*, *51/26*

U.S. Cl. 260—30.4 EP 25 Claims

A room temperature cured reaction product of a resinous epoxide, a polyfunctional organic solid amine effective alone only as a high temperature curing agent for the resinous epoxide, and a solvent for the curing agent in sufficient amount to modify the action of the curing agent and allow room temperature curing to a crosslinked product possessing adequate physical properties and having chemical resistance properties comparable to that degree of chemical resistance normally associated only with resinous epoxide-amine reaction products, cured at elevated temperatures.

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3,794,610

## PLASTICIZED ANAEROBIC COMPOSITION

Andrew G. Bachmann, Weatogue, Conn., assignor to Loctite Corporation, Newington, Conn.

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,377

Int. Cl. C08f *29/46*, *29/50*

U.S. Cl. 260—31.6 10 Claims

Anaerobic compositions possessing improved properties in numerous respects are disclosed, comprising a polymerizable acrylate ester monomer, a peroxy polymerization initiator, and a polymeric plasticizer, specifically a polyester plasticizer having a molecular weight between about 2,000 and about 15,000 and which is substantially aliphatic in character.

3,794,611

## PROCESS FOR OIL-EXTENDING RUBBER

George H. Brice, Augusta, N.J., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Oct. 7, 1971, Ser. No. 192,719

Int. Cl. C08f 45/28
U.S. Cl. 260—33.6 AQ 15 Claims

An improved process for oil-extending rubber involving (A) dissolving a small amount of the rubber (in solid, non-aqueous form) in the extender oil and (B) mixing the resulting rubber/oil premix with additional rubber in an internal mixer. The presence of rubber in the extender oil eliminates the lubricating effect of the oil and sharply reduces the time of mixing.

3,794,612

## SILICONE ELASTOMERS WITH UNPRIMED ADHESION

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Jan. 2, 1973, Ser. No. 320,375

Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 7 Claims

The addition of small amounts of diallylphthalate to curable silicone rubber compositions improves adhesion of the elastomer to substrates, such as wood, metal and plastics.

3,794,613

## CHLORINATED POLYETHYLENE-ORGANIC POLYISOCYANATE ADHESIVE FOR LAMINATING CHLORINATED POLYOLEFIN FILM OR SHEET MATERIALS TO FABRIC

Joseph Drasner, Rockaway, NJ., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application July 20, 1970, Ser. No. 56,738, now Patent No. 3,674,597. Divided and this application Dec. 15, 1971, Ser. No. 208,435

Int. Cl. C08f 45/28, 45/30
U.S. Cl. 260—33.6 UA 2 Claims

An improved adhesive for laminating preformed, chlorinated polyolefin film or sheet material to a fabric substrate, wherein such adhesive consists essentially of an admixture of (1) a substantially amorphous chlorinated polyethylene and (2) from about 25 to 50 parts by weight per 100 parts of (1) of an organic polyisocyanate.

3,794,614

## FLAME RETARDANT PROPYLENE POLYMERS

John Versnel, Plainsboro, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 175,781, Aug. 20, 1971. This application Nov. 29, 1972, Ser. No. 310,516

Int. Cl. C08f 45/58, 45/62
U.S. Cl. 260—45.75 B 10 Claims

A phosphite synergist is used to enhance the flame retardency of a polypropylene composition containing a flame retardant which has the structure of a brominated 1:1 Diels-Alder adduct of a polyhalocyclopentadiene and a polyunsaturated compound. The synergist is an organic phosphite containing not more than one aromatic radical per phosphorus atom, e.g., distearyl pentaerythritol diphosphite. When desired for further enhancement of flame retardancy, a metal oxide or other metal compound may also be incorporated.

3,794,615

## MELT STABILIZED AROMATIC POLYSULPHONES WITH PHOSPHORUS COMPOUNDS

Gordon Maxwell Beverly, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,260

Claims priority, application Great Britain, Mar. 10, 1971, 6,450/71, 6,452/71, 6,453/71, 6,455/71, 6,456/71, 6,457/71

Int. Cl. C08g 23/00
U.S. Cl. 260—45.7 P 6 Claims

A thermoplastic composition comprising (a) 96 to 99.9% by weight of at least one aromatic polysulphone and (b) 4 to 0.01% by weight of at least one salt of at least one oxy-acid of phosphorus containing an alkali metal and/or alkaline earth.

3,794,616

## HEAT STABILIZED COMPOSITIONS

Kent S. Dennis and Willard E. Alexander, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,116

Int. Cl. C08f 45/56, 45/58
U.S. Cl. 260—45.7 P 7 Claims

Anhydride-containing interpolymers such as a copolymer of styrene and maleic anhydride may be stabilized against thermal degradation by mixing the polymer with about 0.01 to 10 weight percent of an acid of P, S, B or Si.

3,794,617

## COPOLYESTER FIBER COMPOSITIONS HAVING IMPROVED FLAME RETARDANT PROPERTIES

Harold Eugene Mains, William Leo O'Brien, H. Fred Oehlschlaeger, Hubert Joseph Sharkey, and Robert Elwood Vail, Jr., Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Mar. 15, 1972, Ser. No. 235,041

Int. Cl. C08g 17/08
U.S. Cl. 260—47 C 14 Claims

Fiber-forming copolyesters having improved color and heat stability in addition to excellent flame retardant properties are obtained when brominated diols, such as 2,2-bis[3,5 - dibromo-4-(2-hydroxyethoxy)phenyl] propane, are incorporated therein.

3,794,618

## NITROGEN-CONTAINING POLYCONDENSATES, A PROCESS FOR THEIR PRODUCTION AND THEIR APPLICATION

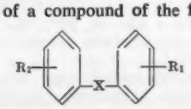
Wilhelm Rating, Wuppertal-Barmen, Arnold Dobbelstein, Wuppertal-Elberfeld, and Horst Holfort, Wuppertal-Langerfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 884,310, Dec. 11, 1969. This application Mar. 29, 1972, Ser. No. 239,324

Int. Cl. C08g 33/02
U.S. Cl. 260—47 C 11 Claims

Thermosetting nitrogen-containing polycondensates useful as insulating coating agents for electrical conductors comprising in condensed form

(D) $n_D$ mol of a compound of the formula



wherein X is a direct carbon to carbon bond, a bivalent $C_1$ to $C_4$ hydrocarbon radical, —S—, —$SO_2$—, or —O—, at least one of $R_1$ and $R_2$ is

—NH—$CHR_3$—COOH

wherein $R_3$ is hydrogen or a $C_1$ to $C_4$ monovalent hydrocarbon radical, a $C_1$ to $C_4$ monovalent hydrocarbon radical substituted by a carboxyl group and any remaining $R_1$ and $R_2$ radical is hydrogen or $n_D$ mol of a $C_1$ to $C_5$ alkanol ester of said compound of said formula, $n_D$ being 0.1 to 1 mol;

(C) 1—$n_D$ mol of a carboxylic acid having a functionality $F_C$ of from 2 to 4 selected from the group consisting of terephthalic acid, isophthalic acid, trimellitic acid, trimesic acid, pyromellitic acid, p-aminobenzoic acid, 3,3',4,4'-benzophenone tetracarboxylic acid and the esters and anhydrides of said acids;

(B) $n_B$ mol of an organic polyisocyanate or polyisothiocyanate, $n_B$ being equal to

$$\frac{(0 \text{ to } 1.7)n_D}{F_B}$$

wherein $F_B$ is the functionality of (B) and has a value of from 2 to 6 and

(A) (0.7 to 3.5) ($F_C$—1)—$n_B$ mol of a member selected from the group consisting of ethane diol, propane diol, butane diol, neopentyl glycol, di- and polyethylene glycols, di- and polypropylene glycols, 4,4'-dihydroxy-diphenyl-2-propane, 4,4'-dihydroxydicyclohexyl-2-propane, 4,4'-dihydroxyethoxy-diphenyl-2-propane, glycerol, trimethylol propane, trimethylol ethane, trishydroxyethyl isocyanurate, pentaerythritol, sorbitol, mannitol, diglycerol, dipentaerythritol, 4,4'-diaminodiphenylmethane; 4,4'-diaminodiphenylether, m- and p-phenylene diamine, bis-4-aminophenyl-1, 1-cyclohexane, 4,4'-diaminodiphenyl sulphone; 2,4-, 2,5-, and 2,6-tolylene diamine, hexamethylene diamine, m- and p-aminobenzoic acid, monoethanolamine and mixtures thereof

and process of producing same.

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**3,794,619**

## PROCESS FOR THE PREPARATION OF BIS(2,3-EPOXY - 2 - METHYLPROPYL) ETHER TYPE EPOXY RESIN

**Koichi Hasegawa and Hisashi Sekiguchi, Chiba, and Hiroshi Zaitsu, Ichihara, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan**

**No Drawing. Filed Dec. 15, 1971, Ser. No. 208,385**
**Claims priority, application Japan, Dec. 17, 1970, 45/112,498**
**Int. Cl. C08g *30/04***
**U.S. Cl. 260—47 EP** **6 Claims**

A process for the preparation of bis(2,3-epoxy-2-methylpropyl)ether type epoxy resin of dehydric phenol, characterized by the concurrent usage, as the starting dihydric phenol, of less than 10 mol percent of nucleus halogen-substituted, or -unsubstituted, symmetric dihydric phenol and at least 10 mol percent of specific asymmetric dihydric phenol. The epoxy resin of this invention exhibits excellent melt-flowability when thermally melted and during processing, as well as excellent solubility, and also has very good flowability and homogeneity in the solution state.

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**3,794,620**

## PREPARATION OF AROMATIC CARBONYL HYDROXAMOYL CHLORIDES

**John H. Bateman, Haverstraw, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

**No Drawing. Filed Apr. 30, 1971, Ser. No. 139,136**
**Int. Cl. C07c *131/00***
**U.S. Cl. 260—566 A** **6 Claims**

Aromatic carbonyl hydroxamoyl chlorides are prepared by a process comprising reacting an aromatic acetyl compound with nitrosyl chloride in an inert solvent, at a temperature of from −5 to 25° C. It is of critical importance that the nitrosyl chloride be free of contaminants which interfere with said reaction. These compounds are useful as crosslinking, chain extending and/or capping agents for unsaturated polymers or polymers containing mercaptan groups.

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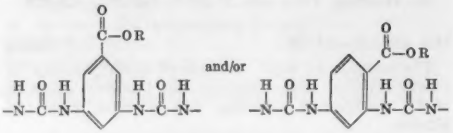
**3,794,621**

## POLYURETHANE ELASTOMERS PREPARED FROM DIAMINO-BENZOIC ACID ESTERS

**Walter Meckel, New Martinsville, W. Va., and Erwin Müller, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed May 20, 1971, Ser. No. 145,480**
**Claims priority, application Germany, May 27, 1970, P 20 25 900.1**
**The portion of the term of the patent subsequent to Aug. 1, 1989, has been disclaimed**
**Int. Cl. C08g *22/16***
**U.S. Cl. 260—75 NH** **4 Claims**

Polyurethane elastomers and a method for preparing them are provided wherein the polyurethane elastomers have structural units of the formula:




in which R is an alkyl radical containing from about 1 to about 20 carbon atoms which may be branched and which may contain hetero atoms if desired. The polyurethane elastomers of this invention are especially useful in the preparation of moldings which will be subjected to severe mechanical stresses such as, for example, rollers or cone belts.

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**3,794,622**

## DIVINYL ETHER-MALEIC ANHYDRIDE COPOLYMER

**David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.**

**No Drawing. Filed Dec. 22, 1971, Ser. No. 211,045**
**Int. Cl. C08f *15/02***
**U.S. Cl. 260—78.5 BB** **1 Claim**

Uniform solid cyclic copolymers of divinyl ether and maleic anhydride, water-soluble on hydrolysis, have been found which are active in treating tumors and viruses but lack the undesirable side effects of the nonuniform prior art copolymers. These copolymers are characterized by containing divinyl ether and maleic anhydride in a mole ratio of about 1:2, having a number average molecular weight of from about 5000 to about 30,000 and a $M_w/M_n$ ratio of about 1.0 to about 3.0.

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**3,794,623**

## PERFLUOROALKYL GROUP CONTAINING $\alpha,\beta$-UNSATURATED DI- AND TRIESTERS AND POLYMERS THEREOF

**Eduard Karl Kleiner, New York, and Martin Knell, Ossining, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

**No Drawing. Continuation-in-part of application Ser. No. 720,370, Apr. 10, 1968. This application Nov. 17, 1971, Ser. No. 199,794**
**Int. Cl. C08f *3/70, 15/16***
**U.S. Cl. 260—78.4 E** **26 Claims**

Perfluoroalkyl group containing esters of $\alpha,\beta$-unsaturated di- and triesters and polymers thereof are disclosed. The polymers have soil repellent properties particularly if applied to substrates such as textile paper, leather and the like. The esters are derived from ether

and/or carbon-carbon double bond containing perfluoroalcohols or mercaptans and $\alpha,\beta$-unsaturated di- or triacids.

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3,794,624

## HIGHLY TRANSPARENT LINEAR POLYAMIDES FROM CAPROLACTAM AND A MIXTURE OF DIAMINO BICYCLOHEXYLS AND A DIBASIC ORGANIC ACID

Raymond Paul Anderson, Overland Park, Kans., assignor to Custom Resins, Inc., Henderson, Ky.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,526

Int. Cl. C08g 20/12

U.S. Cl. 260—78 L 11 Claims

High molecular weight linear polyamides having the property of being transparent in compression molded specimens at least 1" thick are prepared by polymerization of a monomer mixture consisting of 60 to 80 weight percent of caprolactam and, correspondingly, 40 to 20 weight percent of an equimolar mixture of a diamine and a dibasic organic acid in which the diamine consists of two or more of the isomers of diaminobicyclohexyl and the dibasic organic acid consists of one or more aromatic dicarboxylic acid or an alpha, omega-aliphatic dicarboxylic acid. Typically, the transparent linear polyamides are prepared from a monomer mixture consisting of 67 weight percent of caprolactam and 33 weight percent of an equimolar mixture of azelaic acid and a mixture of 2,4'-diaminobicyclohexyls and 4,4'-diaminobicyclohexyls.

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3,794,625

## TRANSPARENT POLYAMIDES FROM CAPROLACTAM AND A MIXTURE OF A METHYL-DIAMINO CYCLOHEXANE AND A DIBASIC ORGANIC ACID

Raymond P. Anderson, Overland Park, and Robert W. Hill, Leawood, Kans., assignors to Custom Resins, Inc., Henderson, Ky.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,635

Int. Cl. C08g 20/12

U.S. Cl. 260—78 L 13 Claims

High molecular weight linear polyamides having the property of being transparent in sections of more than 1" thickness are prepared by polymerization of a monomer mixture consisting of 60 to 80 weight percent of caprolactam and, correspondingly, 40 to 20 weight percent of an equimolar mixture of a diamine and a dibasic organic acid in which the diamine is a methyldiaminocyclohexane and the dibasic organic acid consists of one or more aromatic dicarboxylic acid or an alpha, omega-aliphatic dicarboxylic acid. Typically, the transparent linear polyamides are prepared from a monomer mixture consisting of 67 weight percent of caprolactam and 33 weight percent of an equimolar mixture of azelaic acid and 1-methyl-2,4-diaminocyclohexane.

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3,794,626

## RADIATION SENSITIVE POLYMERS

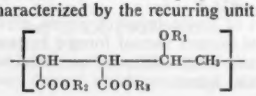
Henri Ulrich, Northford, Fred A. Stuber, North Haven, and Allen J. Broggi, Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Dec. 15, 1972, Ser. No. 315,302

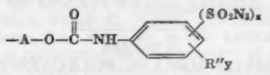
Int. Cl. C08f 27/08; C08g 33/00

U.S. Cl. 260—78.5 T 6 Claims

Hydrophobic radiation-sensitive polymers are provided which are characterized by the recurring unit:



wherein $R_1$=straight chain alkyl ($C_{10-20}$), one of $R_2$ and $R_3$ is hydrogen and the other is



wherein A=alkylene ($C_{2-20}$), R"=lower alkyl or halogen, $x$=1 or 2, $y$=0, 1 or 2, $x+y\leq 3$. Salts of the above compounds are disclosed as well as modifications of the above polymers in which some recurring units contain tertiary amino groups.

The polymers are useful in the preparation of photoresists having high resistance to attack by acid etchants. The polymers are also useful in production of lithographic plates and the like which are to be used with oleophilic inks.

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3,794,627

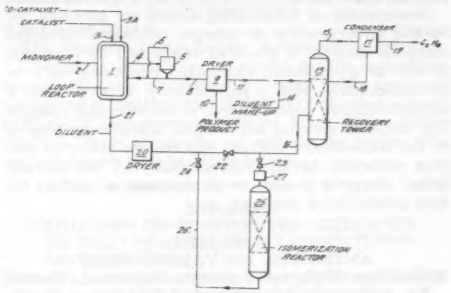
## PROCESS FOR THE PRODUCTION OF ETHYLENE/BUTENE-1 COPOLYMERS AND ETHYLENE HOMOPOLYMERS

John J. Giachetto, Riverside, Conn., assignor to National Petro-Chemicals Corporation, New York, N.Y.

Filed July 27, 1971, Ser. No. 166,382

Int. Cl. C08f 15/40

U.S. Cl. 260—88.2 R 12 Claims




A process for consecutively forming copolymers of ethylene with butene-1 having successively lower butene-1 fractions, or for consecutively forming ethylene/butene-1 copolymers and ethylene homopolymers, in which the butene-1 in the recycle stream is isomerized to non-reactive butene-2- when it is desired to decrease or eliminate the butene-1 in the polymer formed.

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3,794,628

## TRIS(BICYCLOHEPTYL) CHROMIUM COMPOUNDS AND USE AS POLYMERIZATION CATALYSTS

Barton K. Bower, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Original application Feb. 2, 1971, Ser. No. 112,015, now Patent No. 3,704,259. Divided and this application June 21, 1972, Ser. No. 265,022

Int. Cl. C08f 1/74, 3/06

U.S. Cl. 260—94.9 B 10 Claims

Organo trivalent chromium compounds are described wherein the chromium is linked to the bridgehead carbons of three bicyclic radicals, namely a 1-bicyclo-[2·2·1]-heptyl radical that contains two methyl groups attached to carbons adjacent to the bridgehead carbon, i.e., in the 2 and/or 6 position. A typical compound is tris(4-camphyl) chromium. These compounds are useful as catalysts for

the polymerization of 1-olefins and can be used alone or in combination with organometallic activators such as alkylaluminum compounds.

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3,794,629
**STABILIZED AROMATIC POLYCARBONATES**
**Erich Eimers, Dieter Margotte, Rolf Dhein, and Helmut Schmid, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**
**No Drawing. Filed Aug. 9, 1972, Ser. No. 278,909**
**Claims priority, application Germany, Aug. 11, 1971, P 21 40 207.3**
**Int. Cl. C08g *51/58***
**U.S. Cl. 260—45.8 A** **8 Claims**

Aromatic polycarbonates having added a neutral ester of phosphorous acid with at least one oxetane group, the latter functions as a stabilizer for the polycarbonate to lessen discoloration after exposure to heat. Thus, the polycarbonates of the invention are particularly useful in the lighting field.

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3,794,630
**PROTEIN ALLERGENIC EXTRACTS REACTED WITH DIALDEHYDES**
**Noel A. Mullan and Brian G. Overell, Dorking, England, assignors to Beecham Group Limited, Brentford, England**
**No Drawing. Filed July 30, 1970, Ser. No. 59,745**
**Claims priority, application Great Britain, Aug. 6, 1969, 39,289/69**
**Int. Cl. C07g *7/00***
**U.S. Cl. 260—112 R** **22 Claims**

Desensitizing or immunizing agents are provided for treating hypersensitive or allergic conditions. Modified allergenic material is prepared comprising an allergenic protein or glycoprotein crosslinked intermolecularly or intramolecularly with a polyaldehyde, a polyketone, a carbodiimide, an epihalohydrin, or an inorganic cyanate. The modified material has reduced allergenicity relative to the uncrosslinked allergen and has the ability to produce antibodies having cross-specificity for the uncrosslinked allergenic protein or glycoprotein. A method for their production is disclosed.

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3,794,631
**ANTISTATIC POLYAMIDE FIBER**
**Rodney Lee Wells and Lamberto Crescentini, Chester, Va., assignors to Allied Chemical Corporation, Morristown, N.J.**
**No Drawing. Filed Dec. 4, 1972, Ser. No. 312,152**
**Int. Cl. C08g *41/04***
**U.S. Cl. 260—18 N** **3 Claims**

An improved antistatic polyamide fiber is prepared by incorporating in the fiber about 1 to 12 percent by weight of a high molecular weight propylene oxide-ethylene oxide copolymer based on ethylene diamine and about 0.5 to 8 percent by weight of a fatty acid salt having the formula:

$$\left[R-\overset{O}{\overset{\|}{C}}-O-\right]_n^M$$

where R is an aliphatic radical containing at least 6 carbon atoms, and M is an alkali metal or alkaline earth metal, and $n$ is a whole number corresponding to the valence of the metal.

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3,794,632
**ACTH-ACTION PEPTIDES**
**Werner Rittel, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**
**No Drawing. Filed May 19, 1971, Ser. No. 145,032**
**Claims priority, application Switzerland, May 27, 1970, 7,836/70**
**Int. Cl. C07c *103/52***
**U.S. Cl. 260—112.5** **5 Claims**

Peptides or peptide amides which possess 18–24 aminoacids from the N-terminal of the natural corticotropines, but in which the first aminoacid is replaced by β-alanine and the aminoacids in the 17-position and 18-position are replaced by L-lysine or L-ornithine or analogues of these compounds in which one or more aminoacids in the positions 3–5 11, 15 and 16 are replaced by other α-aminoacids and acid addition salts and complexes of these compounds.

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3,794,633
**PROCESS FOR THE MANUFACTURE OF PEPTIDES CONTAINING CYSTINE**
**Bruno Kamber and Werner Rittel, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, NY.**
**No Drawing. Filed Dec. 9, 1970, Ser. No. 96,556**
**Claims priority, application Switzerland, Dec. 16, 1969, 18,668/69**
**Int. Cl. C07c *103/52*; C07g *7/00*; C08h *1/00***
**U.S. Cl. 260—112.5** **12 Claims**

The invention concerns an improved process for the manufacture of cystine-containing peptides from cysteine-containing aminoacid sequences whose mercapto groups are protected by a group of the formula

$$—CH_2—NH—CO—R,$$

in which CO—R represents the acyl radical of a carboxylic acid, wherein the S-protected cysteine-containing sequences are directly oxidized with iodine to yield the cystine disulfide bond.

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3,794,634
**ALIPHATIC LIQUID-PEPTIZABLE CHLORINATED BUTADIENE POLYMER BLENDS**
**Robert William Keown, Wilmington, and Jack Leland Nyce, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**
**No Drawing. Filed Mar. 16, 1972, Ser. No. 235,440**
**Int. Cl. C08f *45/28, 45/34***
**U.S. Cl. 260—33.6 A** **3 Claims**

The invention provides a blend of chlorinated butadiene polymers which is readily peptizable in aliphatic liquids to form sprayable dispersions useful as adhesives.

The blend comprises (a) a graft copolymer of (1) a chlorinated butadiene selected from chloroprene and 2,3-dichlorobutadiene-1,3, (2) an alkyl acrylate or methacrylate, as the graft portion, and (3) up to 2% by weight of sulfur and (b) a copolymer of sulfur and a chlorinated butadiene selected from chloroprene and 2,3-dichlorobutadiene-1,3. The proportion by weight of alkyl acrylate or methacrylate is 40 to 80% in (a) and 15 to 60% in the total composition; and the proportion of sulfur in (b) is 0.2 to 2%. The number average molecular weight between sulfur atoms in (b) is not over 110,000, and the alkyl group of the alkyl acrylate or methacrylate in (a) contains 1 to 18 carbon atoms.

A preferred method for making the sprayable dispersions from the blends comprises mixing the blend with an organic liquid which is a non-solvent for component (b) but is a solvent for the alkyl acrylate or methacrylate graft of component (a), mixing with the resulting product a thiophilic peptizing agent, and stirring until the desired dispersion is obtained.

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3,794,635
**N-HETEROARYLIDENE ERYTHROMYCYLAMINES**
**Delme Evans, Chalfont St. Peter, England, assignor to Lilly Industries Limited, London, England**
**No Drawing. Filed Sept. 27, 1971, Ser. No. 184,220**
**Claims priority, application United Kingdom, Sept. 30, 1970, 46,403/70**
**Int. Cl. C07c *129/18***
**U.S. Cl. 260—210 E** **14 Claims**

Derivatives of erythromycyl A amine, erythromycyl B amine and epi isomers thereof formed by reaction of the amine with heteroaryl aldehydes are useful as antibiotics and amoebicidal agents.

3,794,636

## PROCESS FOR PREPARATION OF THIAZOLE HYDROHALIDES

Mikhail M. Girgis, Guelph, Ontario, Canada, assignor to Uniroyal Ltd., Montreal, Quebec, Canada

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,822
Int. Cl. C07d 91/32
U.S. Cl. 260—247.1 11 Claims

Thiazole hydrohalides are synthesized by reacting an alpha-haloacetoacetamide having the formula

$$CH_3COCHXCONHR_1$$

with a thionamide having the formula $R_2CSNH_2$ in acetonitrile as a general solvent or in a nitrile having the formula $R_2CN$ where $R_2$ is as in the formula for the thionamide. The thiazole hydrohalide which is precipitated upon cooling the reaction mixture is separated as the product. If desired, the thiazole hydrohalide can be neutralized with a base to form the free thiazole. The products are useful as plant growth regulants and fungicides.

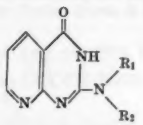
3,794,637

## PYRIDO[2,3-d]PYRIMIDIN-4(3H)-ONES

Fritz Wiedemann and Max Thiel, Mannheim, Kurt Stach, Mannheim-Waldhof, Egon Roesch, Lampertheim, and Klaus Hardebeck, Ludwigshafen (Rhine), Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

No Drawing. Filed July 22, 1971, Ser. No. 165,391
Claims priority, application Germany, July 31, 1970, P 20 38 035.2
Int. Cl. C07d 51/46
U.S. Cl. 260—256.4 F 5 Claims

Pyrido-[2,3-d]pyrimidin-4(3H)-ones of the general formula



(I)

wherein

$R_1$ is a lower alkyl, alkenyl, cycloalkyl, aralkyl, furylalkyl, thienylalkyl or tetrahydrofurylalkyl radical, optionally substituted by hydroxy, alkoxy or alkylmercapto radicals, and

$R_2$ is $R_1$ or hydrogen,

and the salts thereof with physiologically compatible acids. These compounds exhibt longlasting diuretic action.

3,794,638

## THERMOSETTING COMPOSITIONS COMPRISING HIGH VINYL BUTADIENE POLYMER AND A FREE RADICAL INITIATOR

Peter Henry Westermann, Dorking, England, assignor to BP Chemicals Limited, London, England

No Drawing. Filed July 20, 1971, Ser. No. 164,422
Claims priority, application Great Britain, July 27, 1970, 36,294/70
Int. Cl. C08d 5/02
U.S. Cl. 260—94.7 A 3 Claims

Thermosetting moulding compositions comprising high vinyl butadiene polymer and, as free radical initiator, 1,3- or 1,4-bis (tertiarybutyl) peroxyisopropyl benzene are described which have improved dimensional stability.

3,794,639

## BENZOXAZEPINES AND BENZOTHIAZEPINES

John Krapcho, Somerset, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 10, 1966, Ser. No. 533,264
Int. Cl. C07d 93/40, 87/54
U.S. Cl. 260—239.3 B 7 Claims

Disclosed herein are benzothiazepin-5-one compounds and derivatives thereof which are useful as tranquilizers.

3,794,640

## HEXACHLOROCYCLOPENTADIENE ADDUCTS OF UNSATURATED AMIDES

Robert R. Mod, Frank C. Magne, and Evald L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Nov. 21, 1969, Ser. No. 878,922, now Patent No. 3,663,582. Divided and this application Dec. 16, 1971, Ser. No. 208,946
Int. Cl. C07d 87/34
U.S. Cl. 260—247.7 H 1 Claim

This invention relates to certain new nitrogen-containing compounds, more particularly to N-substituted and N,N-disubstituted amides, the acyl moieties of which are the acyl moieties of the hexachlorocyclopentadiene adducts of either 9-octadecenoic or 10-undecenoic acids.

The compounds which are the subject of this invention are characterized by the fact that as growth inhibitors they are effective against a variety of bacteria, yeasts, and molds, some of which are pathogenic. They are also useful as plasticizers.

3,794,641

## SUBSTITUTED PHTHALIMIDO-1,3,5-TRIAZINES

Katalin Görög, nee Privitzer and Györgyi Bruckner, Budapest, Béla Ráskay, Veszprem, and Kálmán Farkas, Erzsébet Grega, nee Toth, Sándor Marosvölgyi, Zoltan Pintér, and Gyula Szilágyi, Miskole, Hungary, assignors to Nehezvegyipari Kutato Intezet, Veszprem, and Eszakmagyarorszagi, Vegyimuvek, Sajobabony, Hungary

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,026
Int. Cl. C07d 55/20
U.S. Cl. 260—249.8 2 Claims

This invention relates to new, substituted phthalimido-1,3,5-triazines, as well as to a process for the preparation thereof. The new compounds according to the invention correspond to 2-phthalimido-4X,6Y-1,3,5-triazines, wherein X and Y each represent chlorine, lower alkoxy, lower alkylthio, lower alkylamino or phthalimido groups. The new compounds have herbicide activity.

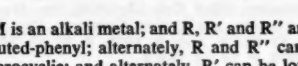
3,794,642

## OXIDATION OF SUBSTITUTED METHANES TO THE CORRESPONDING SUBSTITUTED METHANOLS

Thomas J. Kress, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 168,343, Aug. 2, 1971. This application Jan. 15, 1973, Ser. No. 323,498
Int. Cl. C07d 31/28
U.S. Cl. 260—251 R 9 Claims

The present invention is directed to the following process:



wherein M is an alkali metal; and R, R′ and R″ are phenyl or substituted-phenyl; alternately, R and R″ can be aromatic heterocyclic; and alternately, R′ can be loweralkyl, cycloalkyl, benzyl or naphthylmethyl.

3,794,643

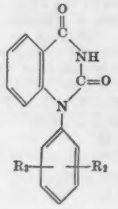
## QUINAZOLINEDIONE DERIVATIVES

Takahiro Yabuuchi, Takarazuka, and Hajime Fujimura, Akira Nakagawa, and Ryuichi Kimura, Kyoto, Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Saga Prefecture, Japan

No Drawing. Filed Apr. 20, 1971, Ser. No. 135,693
Int. Cl. C07d 51/48
U.S. Cl. 260—260 8 Claims

The present invention relates to novel quinazolinedione derivatives possessing excellent anti-inflammatory action and analgesic action, and process for the production

thereof by reacting the compounds having the following general formula,



(wherein $R_2$ and/or $R_3$ represent hydrogen atom, $CF_3$, one or more of halogen atoms selected from the group consisting of Cl, Br and F, methyl-, methoxy- or ethoxy-radical), with the general formula, $R_1X$ or $R_2SO_4$ (wherein $R_1$ represents alkyl radical, substituted alkyl radical or acyl radical, X represents halogen atom, and R represents lower alkyl radical).

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**3,794,644**

**PYRROLO-BENZODIAZEPINONE COMPOUNDS**

**Kazuo Kariyone, Kyoto, and Hisatoyo Yazawa, Toyonaka, Japan, assignors to Fujisawa Pharmaceutical Co, Ltd., Osaka, Japan**

**No Drawing. Filed June 25, 1970, Ser. No. 49,974**
**Claims priority, application Japan, June 26, 1969, 49/50,780**
**Int. Cl. C07d** *53/06*
**U.S. Cl. 260—239.3 T** **3 Claims**

The pyrrolo-benzodiazepinone compounds of the formula:

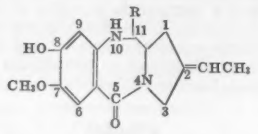

exhibit activity against a number of micro-organisms including bacteria, fungi and bacteriophage and also have antiviral or antitumor activities, and therefore are useful as therapeutic agents in the treatment of diseases caused by certain pathogenic microorganisms.

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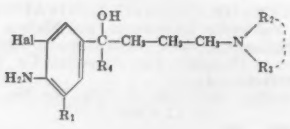
**3,794,645**

**1 - (m-HALO-p-AMINO-PHENYL) - 4 - AMINO-TERT.BUTANOLS-(1) AND SALTS THEREOF**

**Helmut Pieper and Gerd Kruger, Biberach an der Riss, Klaus-Reinhold Noll, Warthausen-Obernhofen, and Johannes Keck and Joachim Kahling, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany**

**No Drawing. Filed Oct. 12, 1970, Ser. No. 80,226**
**Claims priority, application Germany, Oct. 13, 1969, P 19 51 614.4; Aug. 8, 1970, P 20 42 749.0; Aug. 28, 1970, P 20 42 750.3**
**Int. Cl. C07c** *91/40;* **C07d** *29/28, 41/04*
**U.S. Cl. 260—239 B** **9 Claims**

Compounds of the formula



wherein

Hal is chlorine or bromine,

$R_1$ is hydrogen, chlorine or bromine,

$R_2$ is hydrogen, alkyl, alkenyl, dialkylamino-alkyl, cycloalkyl, phenyl, aralkyl or adamantyl,

$R_3$ is alkyl, alkenyl, dialkylamino-alkyl, cycloalkyl, phenyl, arakyl or adamantyl,

$R_2$ and $R_3$, together with each other and the nitrogen atom to which they are attached, are pyrrolidino, piperidino, piperazino, morpholino, hexamethyleneimino or camphidino, where each of these may optionally have one or more hydroxy, alkoxy, phenyl or lower alkyl substituents attached thereto, and

$R_4$ is alkyl, cycloalkyl, cycloalkenyl, norbornyl, phenyl, aralkyl, naphthyl, pyridyl or thienyl, where said cycloalkyl may optionaly have one or more hydroxyl, alkyl, alkoxy, alkylthio, trifluoromethyl, phenyl or phenoxy substituents attached thereto, and said phenyl may optionally have one or more fluoro, chloro or bromo substituents attached thereto,

and their non-toxic, pharmocologically acceptable acid addition salts; the compounds as well as the salts are useful as sedatives, anti-emetics, stomach ulcler-inhibitors and CNS-stimulants in warm-blooded animals.

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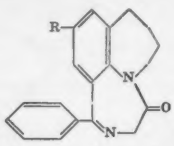
**3,794,646**

**5,7-DISUBSTITUTED-1,9-TETRAMETHYLENE-1,4-BENZODIAZEPIN-2-ONES**

**William John Welstead, Jr., and Ying-Ho Chen, Richmond, Va., assignors to A. H. Robins Company Incorporated, Richmond, Va.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 28,561, Apr. 14, 1970. This application Jan. 18, 1972, Ser. No. 218,834**
**Int. Cl. C07d** *53/06*
**US. Cl. 260—239.3 T** **3 Claims**

The preparation of compounds of the formula



wherein R is hydrogen and chlorine is described. The compounds were shown to protest mice against convulsions induced by electroshock or chemical means.

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**3,794,647**

**PROCESS FOR PURIFYING LACTAMS**

**Ruthild Henn, Domat-Ems, and Hans-Joachim Schultze and Clau Berther, Chur, Grisons, Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland**

**No Drawing. Filed Sept. 22, 1971, Ser. No. 182,830**
**Claims priority, application Switzerland, Oct. 1, 1970, 14,550/70**
**Int. Cl. C07d** *41/06*
**U.S. Cl. 260—239.3 A** **18 Claims**

A process for the purification of lactams by extraction wherein the lactam is treated in the crystalline state with a solvent capable of dissolving the impurities selectively.

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**3,794,648**

**PROCESS FOR MAKING CATALYTIC NOBLE METAL COMPLEXES**

**Philip D. Hammond and Frederick E. Manemeit, North Haven, and William E. Litz, Jr., Branford, Conn., assignors to Olin Corporation, New Haven, Conn.**

**No Drawing. Filed June 14, 1971, Ser. No. 153,018**
**Int. Cl. C07d** *35/18*
**U.S. Cl. 260—270 R** **7 Claims**

An improvement is disclosed in the reaction of a heteroaromatic nitrogen compound with an alkali metal-halo-

genous noble metal derivative to form a complex. The improvement resides in controlling the pH of the reaction mixture within the range of about 2.0–5.0 in order to minimize noble metal losses and maximize complex yield. The product complex is of utility in catalyzing the reaction of carbon monoxide with aromatic nitro compounds to form aromatic isocyanates.

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## 3,794,649

## PROCESS FOR PREPARING NOBLE METAL COMPLEXES

**Philip D. Hammond, North Haven, William E. Litz, Jr., Branford, and Frederick E. Manemelt, North Haven, Conn., assignors to Olin Corporation, New Haven, Conn.**

**No Drawing. Filed Aug. 9, 1971, Ser. No. 170,286**

**Int. Cl. C07d *35/18***

**U.S. Cl. 260—270 R** **9 Claims**

Noble metal complexes are prepared by reacting, in a halogenated aromatic solvent medium, a powdered noble metal with a hydrohalide derivative of a heteroaromatic nitrogen compound. The resulting complexes are useful catalysts in the reaction of carbon monoxide with aromatic nitro compounds to form aromatic isocyanates.

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## 3,794,650

## α-AMINOMETHYL - 2 - QUINOLINEETHANOLS, α - AMINOMETHYL - 1 - ISOQUINOLINEETHANOLS, α-AMINOMETHYL - 6 - PHENANTHRIDINEETHANOLS AND THEIR KETONIC ANALOGUES

**Robert F. Meyer and Charlotte D. Stratton, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.**

**No Drawing. Filed Aug. 14, 1972, Ser. No. 280,514**

**Int. Cl. C07d *39/02***

**U.S. Cl. 260—286 A** **7 Claims**

α-Aminomethyl-2-quinolineethanols, α-aminomethyl-1-isoquinolineethanols, α-aminomethyl - 6 - phenanthridineethanols and their ketonic analogues; and acid-addition salts. The amino group is substituted by tert-butyl, isopropyl, or 3,4-dimethoxyphenethyl. The 2-quinolyl group is optionally substituted by methyl or phenyl. The compounds are pharmacological agents, especially beta-adrenergic blocking agents. The aminoalkanols can be produced by reduction of the corresponding aminoketones or by catalytic hydrogenation of an N-benzyl derivative. The aminoketones can be produced by the acidic hydrolysis of a corresponding eneamine derivative or by catalytic hydrogenation of an N-benzyl derivative. Starting materials for use in those processes are obtained by detailed procedures generally starting from a methyl-substituted heterocyclic nucleus.

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## 3,794,651

## 1-[OMEGA-(4-PHENYLPIPERAZINYL)ALKYL]-2-METHYLBENZIMIDAZOLES

**Grover Cleveland Helsley, Pottersville, N.J., and William John Welstead, Jr., Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.**

**No Drawing. Original application Apr. 11, 1969, Ser. No. 815,492, now Patent No. 3,634,441, dated Jan. 11, 1972. Divided and this application July 19, 1971, Ser. No. 164,001**

**Int. Cl. C07d *51/70***

**U.S. Cl. 260—268 BC** **6 Claims**

1 - [omega-(4-phenylpiperazinyl)alkyl]-2-methylbenzimidazoles useful as bronchodilators are disclosed. The compounds are prepared from 1-(omega-haloalkyl)-2-methylbenzimidazoles by reacting them with 4-phenylpiperazines.



## 3,794,652

## AMINOETHANESULFONYL DERIVATIVES

**Shun-Ichi Naito, 35 Murasakino Kamitoridacho, Kita-ku, Kyoto, Japan**

**No Drawing. Original application Mar. 9, 1970, Ser. No. 17,969, now Patent No. 3,709,889. Divided and this application Aug. 25, 1971, Ser. No. 174,928**

**Claims priority, application Japan, May 8, 1969, 44/35,435, 44/35,436, 44/35,437**

**Int. Cl. C07d *31/48***

**U.S. Cl. 260—293.69** **11 Claims**

Stable, water-soluble aminoethanesulfonyl derivatives having analgesic activity or antilipemic action are described. They are prepared by ammonolysis of the corresponding halides, preferably under high pressure in the presence of a catalyst, or by deacylation of the corresponding acylamino or acylimino compound, or by nicotinoylation of an amino compound.

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## 3,794,653

## SUBSTITUTED N-BENZYLIMIDAZOLES

**Wilfried Draber, Wuppertal-Elberfeld, Erik Regel, Wuppertal-Cronenberg, and Karl-Heinz Büchel and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

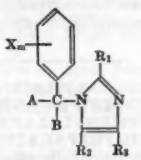
**No Drawing. Original application Mar. 4, 1970, Ser. No. 16,219, now Patent No. 3,709,901. Divided and this application Jan. 5, 1972, Ser. No. 215,676**

**Claims priority, application Germany, Mar. 7, 1969, P 19 11 646.2**

**Int. Cl. C07d *31/46, 31/50***

**U.S. Cl. 260—296 R** **18 Claims**

Substituted N-benzylimidazoles of the formula:



wherein

$R_1$, $R_2$ and $R_3$ are each hydrogen, straight or branched chain lower alkyl or straight or branched chain lower alkenyl,

X is hydrogen, lower alkyl, lower alkoxy, lower alkylmercapto, lower alkenylmercapto, trifluoromethyl, halogen, nitro, cyano, amino or amino substituted by 1 or 2 aliphatic moieties,

*m* is 1 or 2,

A is phenyl; substituted phenyl, pyridyl, lower alkyl or cycloalkyl,

B is a 5-membered heteroaromatic ring of the formula:

wherein

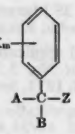
D is CH or N,

E is oxygen, sulphur, N-lower alkyl or N-aryl,

Y is hydrogen, 1 or 2 lower alkyls, 1 or 2 halogens, aryl or substituted aryl, and

*n* is 1 or 2,

are produced by reacting a compound of the formula:



wherein A, B, X and *m* are as above defined and Z is chlorine or bromine, with at least the theoretically necessary amount of imidazole, optionally in the presence of an acid acceptor, in a polar organic solvent, at a temperature of from 20° C. to 150° C. These substituted N-benzylimidazoles are useful as antimycotics and are effective against both yeasts and dermatophytes. These compounds are effective against a wide range of fungi pathogenic to humans and animals.

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**3,794,654**

**TETRANICOTINOYL-TRIS(HYDROXYMETHYL)-AMINOMETHANE**

**Bernt Jabes Lindberg and Sven Gunnar Kronberg, Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden**

**No Drawing. Continuation of abandoned application Ser. No. 841,965, July 15, 1969. This application Apr. 25, 1972, Ser. No. 247,465**

**Int. Cl. C07d *31/44***

**U.S. Cl. 260—295.5 A** **1 Claim**

The present invention relates to a new chemical substance consisting of tris(hydroxymethyl)-aminomethane and nicotinoyl esters thereof wherein the number of ester bound nicotinoyl groups ranges from 0–4 or mixtures thereof. The substances are prepared by reacting one equivalent of tris(hydroxymethyl)-aminomethane with 1–4 equivalents of nicotinoylchloride.HCl in the presence of an acid binding agent such as dry pyridine. The properties of these substances when taken internally are cholesterol lower agents and circulation promotion agents. When applied topically these substances improve circulation.

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**3,794,655**

**OPTICAL ANTIPODES D- AND L-N-BENZOYL-3,4-DIHYDROXYPHENYLALANINE AND A PROCESS FOR THEIR PREPARATION**

**Hans Schubel, Siegburg-Seligenthal, Paul Janssen, Bensberg-Refrath, and Heinz-Ratz, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany**

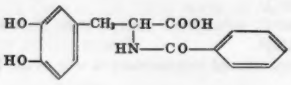
**No Drawing. Filed Dec. 18, 1970, Ser. No. 99,527**

**Claims priority, application Germany, Dec. 20, 1969, P 19 63 992.0**

**Int. Cl. C07c *103/30, 101/30;* C07d *43/24***

**U.S. Cl. 260—284** **6 Claims**

Optical antipodes D- and L-N-benzoyl-3,4-dihydroxyphenylalanine of the formula:



and the cinchonine salts thereof. These compounds are made by reacting chinchonine with D- and/or L-N-benzoyl-3,4-dihydroxyphenylalanine and then crystallizing the salt from mixtures of water with lower ketones, lower alkanols, lower ethers or mixtures thereof in order to separate and resolve the optical isomers. These salts are cleaved to the optically pure D- or L-N-benzoyl-3,4-dihydroxyphenylalanine which is itself cleaved to 3,4-dihydroxyphenylalanine.

**3,794,656**

**SUBSTITUTED 3-PYRIDINEMETHANOLS AND METHANES**

**Earle M. Van Heyningen, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**No Drawing. Continuation of application Ser. No. 814,850, Apr. 9, 1969, which is a continuation-in-part of application Ser. No. 553,815, Mar. 14, 1966. This application Nov. 30, 1971, Ser. No. 203,480**

**Int. Cl. C07d *31/24, 31/28***

**U.S. Cl. 260—290 R** **6 Claims**

Novel substituted 3-pyridinemethanols and methanes and nonphytotoxic acid addition salts thereof useful in controlling fungi which attack turf, food crops, and ornamental plants.

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**3,794,657**

**2-(3'-TRIFLUOROMETHYLTHIO-ANILINO)-NICOTINIC ACID, ESTERS THEREOF AND PHARMACEUTICALLY ACCEPTABLE INORGANIC OR BASIC SALTS THEREOF**

**Henry Najer and Jean-Francois Giudicelli, Paris, France, assignors to Synthelabo, Paris, France**

**No Drawing. Continuation-in-part of application Ser. No. 272,140, July 17, 1972. This application Sept. 29, 1972, Ser. No. 293,547**

**Claims priority, application France, July 15, 1971, 7125859; Sept. 30, 1971 7135155, 7135156**

**Int. Cl. C07d *31/50***

**U.S. Cl. 260—294.8 G** **5 Claims**

2-(3'-trifluoromethylthio-anilino)nicotinic acid and its salts and esters have useful anti-inflammatory analgesic and antipyretic properties.

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**3,794,658**

**SUBSTITUTED NITROIMIDAZOLYLTHIADIAZOLINONES AND METHOD OF USING THE SAME**

**Spencer Douglas Carter, Trenton, and Gerald Berkelhammer, Princeton, N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**No Drawing. Filed Mar. 20, 1972, Ser. No. 236,232**

**Int. Cl. C07d *99/10***

**U.S. Cl. 260—302 H** **5 Claims**

Preparation of nitroimidazolylthiadiazolinones and a method for controlling coccidiosis in warm-blooded animals by orally administering to said animals an edible carrier containing an effective amount of a nitroimidazolylthiadiazolinone, is described.

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**3,794,659**

**ASYMMETRICALLY DISUBSTITUTED ISOINDOLINES**

**Heinrich Leister, Cologne-Stammheim, and Heinrich Vollmann, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

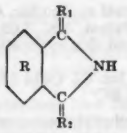
**No Drawing Original application Sept. 8, 1967, Ser. No. 666,458, now Patent No. 3,646,033. Divided and this application Sept. 8, 1971, Ser. No. 178,826**

**Claims priority, application Germany, Sept. 9, 1966, F 50,163**

**Int. Cl. C07d *99/02, 99/10***

**U.S. Cl. 260—305** **1 Claim**

Isoindoline derivatives asymmetrically disubstituted in the 1- and 3-positions corresponding to the formula



in which the cyclic radical R is an aromatic ring, a substituted aromatic ring, a tetrahydrogenated aromatic ring, a nitrogen containing heterocyclic ring, or a sulphur con-

taining heterocyclic ring, and $R_1$ and $R_2$ which are different, are bivalent radicals of a compound which contains two active hydrogen atoms attached to a nitrogen atom; and a two-stage process for making the same. The isoindoline derivatives are excellent dyestuffs for dyeing and printing synthetic fiber materials.

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**3,794,660**

**2-PHENYL, HALOPHENYL AND ALKYLPHENYL-3a,4,5,6,7,7a - HEXAHYDRO-3a-HYDROXYBENZOTHIAZOLE - 4 - CARBOXYLIC ACID, ALKYL ESTERS**

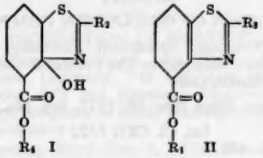
**Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.**

**No Drawing. Original application Mar. 17, 1971, Ser. No. 125,413, now Patent No. 3,694,450, dated Sept. 26, 1972. Divided and this application May 30, 1972, Ser. No. 257,608**

**Int. Cl. C07d 91/24**

**U.S. Cl. 260—306.7** **3 Claims**

Novel pharmacological active compounds have been prepared which have the general formulae:



wherein $R_1$ is selected from the group consisting of hydrogen and (lower) alkyl; $R_2$ is selected from the group consisting of phenyl, halophenyl and (lower) alkylphenyl; $R_3$ is selected from the group consisting of phenyl, halophenyl, (lower) alkylphenyl, pyridyl, amino, anilino, hydrazino, benzylidenehydrazino, halobenzylidenehydrazino, nitrobenzylidenehydrazino and (lower) alkylbenzylidenehydrazino; $R_4$ is (lower) alkyl; and the pharmaceutically acceptable salts thereof.

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**3,794,661**

**TRIAZOLYL CARBAMATES**

**Beat Boehner, Binningen, and Dag Dawes, Pratteln, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.**

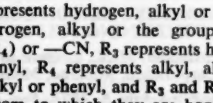
**No Drawing. Filed Jan. 26, 1972, Ser. No. 221,052**

**Claims priority, application Switzerland, Feb. 4, 1971, 1,634/71; Jan. 7, 1972, 274/72**

**Int. Cl. C07d 55/06**

**U.S. Cl. 260—308 R** **5 Claims**

Triazolyl carbamates of the formula



wherein $R_1$ represents hydrogen, alkyl or cycloalkyl, $R_2$ represents hydrogen, alkyl or the groups —$COOR_1$—CO—$N(R_3)(R_4)$ or —CN, $R_3$ represents hydrogen, alkyl, alkoxy or alkinyl, $R_4$ represents alkyl, alkenyl, alkinyl, alkoxy, cycloalkyl or phenyl, and $R_3$ and $R_4$ together with the nitrogen atom to which they are bonded, represents a heterocyclic radical, their manufacture and their use in pest control.

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**3,794,662**

**METHOD OF MAKING ARALKYL, CHLORO MALEIC AND GLUTARIC ANHYDRIDES**

**Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.**

**No Drawing. Filed Mar. 15, 1971, Ser. No. 124,438**

**Int. Cl. C07c 57/02, 57/14**

**U.S. Cl. 260—345.9** **9 Claims**

Aralkyl-substituted halogenated unsaturated polybasic acid anhydrides are prepared by condensing alkylaromatic compounds with polyhalo-substituted unsaturated polybasic acid anhydrides in the presence of free radical-generating compounds at elevated temperatures to produce the desired products.

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**3,794,663**

**N,N'-(9-OXOXANTHENE-2,7-DIYL)BIS[2-DI(LOWER)ALKYL-AMINOACETAMIDES]**

**Arthur A. Santilli, Havertown, Anthony C. Scotese, King of Prussia, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.**

**No Drawing. Filed Oct. 30, 1972, Ser. No. 302,380**

**Int. Cl. C07d 7/44**

**U.S. Cl. 260—335** **2 Claims**

N,N'-(9 - oxoxanthene - 2,7 - diyl)bis[2-di(lower) alkylaminoacetamides] have antiamebic activity.

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**3,794,664**

**BICYCLO[3.1.0]HEXANE INTERMEDIATES FOR PRODUCING PROSTAGLANDINS $F_{1\alpha}$ AND $F_{1\beta}$**

**George E. Just, Westmount, Quebec, Canada, and Chaim Simonovitch, Rishon-le-Zion, Israel; said Simonovitch assignor to said Just**

**No Drawing. Continuation of application Ser. No. 103,335, Dec. 31, 1970, which is a continuation-in-part of application Ser. No. 657,085, July 31, 1967, both now abandoned. This application Aug. 17, 1972, Ser. No. 281,337**

**Int. Cl. C07d 1/20, 1/22**

**U.S. Cl. 260—348 A** **15 Claims**

Prostaglandin $F_{1\alpha}$, prostaglandin $F_{1\beta}$, and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

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**3,794,665**

**2,5-DISUBSTITUTED 1,3,4-THIADIAZOLES**

**Gerald Berkelhammer, Princeton, and Goro Asato, Titusville, N.J., assignors to American Cyanamid Company, Stamford, Conn.**

**No Drawing. Application Nov. 25, 1970, Ser. No. 92,908, now Patent No. 3,725,396, which is a continuation-in-part of application Ser. No. 767,004, Oct. 11, 1968, now Patent No. 3,598,830. Divided and this application Oct. 25, 1972, Ser. No. 300,640**

**Int. Cl. C07d 33/50, 91/62**

**U.S. Cl. 260—306.8 D** **5 Claims**

This invention relates to novel 5-amino, 5-acetamido and 5-nitro-2-substituted 1,3,4-thiadiazoles and their derivatives. These compounds are useful as antibacterial or anti-fungal agents.

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**3,794,666**

**PROCESS FOR PRODUCING 3,3-BIS(p-DIMETHYLAMINO-PHENYL)-4,5,6 OR 7 DIMETHYLAMINOPHTHALIDE**

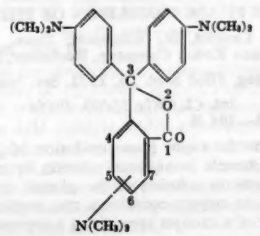
**Seiji Hotto, Hirakata, Hideki Yanagihara, Takatsuki, and Takashi Akamatsu, Ashiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan**

**No Drawing. Filed Apr. 7, 1970, Ser. No. 26,420**

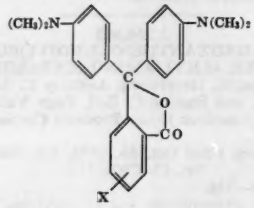
**Int. Cl. C07d 5/32**

**U.S. Cl. 260—343.3** **8 Claims**

An improved process for the production of so-called crystal violet lactone having the formula,



which comprises reacting a mixture of formaldehyde and a compound having the formula,



wherein X is nitro or amino group, in an inert solvent, with hydrogen in the presence of a catalyst for the catalytic reduction, if desired in the presence of an acid. The crystal violet lactone is useful for the production of pressure-sensitive copy paper.

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**3,794,667**

## ISOCYANATO-P-QUINONES

**Ulrich von Gizycki, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany**

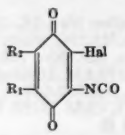
**No Drawing. Filed Jan. 28, 1972, Ser. No. 221,794**

**Claims priority, application Germany, Feb. 5, 1971, P 21 05 489.7**

**Int. Cl. C07c *119/04***

**U.S. Cl. 260—396 R** **3 Claims**

Isocyanates having the formula



in which Hal is fluorine, chlorine or bromine and $R_1$ and $R_2$ are the same or different and are hydrogen, fluorine, chlorine, bromine, a cyano group or one of $R_1$ and $R_2$ is an isocyanato group or $R_1$ and $R_2$ together form an anellated aromatic ring are provided and a process for preparing them in which the corresponding amino-p-quinone is reacted in an inert organic solvent with at least 1 mol of oxalyl chloride per mol of amino groups while heating under reflux conditions until the evolution of gas ceases. The isocyanates of this invention are useful in the production of polyurethanes, dye-stuffs, plant protection agents and pharmaceuticals.

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**3,794,668**

## VAPOR PHASE OXIDATION OF PHENOLS

**Thomas H. Larkins, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.**

**No Drawing. Filed Sept. 25, 1972, Ser. No. 293,299**

**Int. Cl. C07c *37/00, 49/64***

**U.S. Cl. 260—396 R** **8 Claims**

Process for the vapor phase oxidation of phenols and substituted phenols in aqueous solution by contacting a vaporized aqueous solution of the phenol or substituted phenol with an oxygen-containing gas, preferably air, in the presence of a catalyst comprising a copper salt, thallic salt and an alkali metal bisulfate supported on silicon carbide or silica alumina having a surface area of less than 30 square meters per gram.

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**3,794,669**

## PROCESS FOR CONVERTING OXATHIOLANES, DITHIOLANES AND DITHIANES TO ALDEHYDES OR KETONES

**Hans Wynberg, Groningen, Netherlands, David W. Emerson, Dearborn, Mich., and Wilhelmus F. J. Huurdeman, Groningen, Netherlands, assignors to E. R. Squibb & Sons, Inc., Lawrenceville, Princeton, N.J.**

**No Drawing. Filed Aug. 4, 1971, Ser. No. 169,127**

**Int. Cl. C07c *169/50***

**U.S. Cl. 260—397.2** **4 Claims**

1,3-oxathiolanes, 1,3-dithiolanes and 1,3-dithianes may be readily converted to aldehydes or ketones by treatment with chloramine-T.

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**3,794,670**

## PREPARATION OF ORGANOTIN COMPOUNDS

**Donald J. Peterson, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio**

**No Drawing. Filed June 30, 1971, Ser. No. 158,528**

**Int. Cl. C07f *7/22***

**U.S. Cl. 260—429.7** **13 Claims**

A process for preparing (organosulfonylmethyl)triorganotin compounds by reacting a triorganotin amine and an organosulfonylmethyl compound. The resulting products are useful as pesticides and seed protecting agents.

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**3,794,671**

## CATALYSTS AND COMPOSITIONS THEREFOR

**Geoffrey Wilkinson, London, England, assignor to Johnson, Matthey & Co., Limited, London, England**

**No Drawing. Filed July 20, 1971, Ser. No. 164,495**

**Claims priority, application Great Britain, July 22, 1970, 35,437/70**

**Int. Cl. C07f *15/00***

**U.S. Cl. 260—429 R** **3 Claims**

Nonhalogen or pseudo-halogen coordination complexes of Rh(I) containing a stabilizing donor ligand. The complexes are made by adding a compound which acts as a stabilizing donor ligand to a solution of a rhodium (II) carboxylate protonated by an acid. The complexes are useful catalysts.

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**3,794,672**

## PERFLUOROALKYL SILICON COMPOUNDS CONTAINING SULFUR

**Yung K. Kim, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.**

**No Drawing. Filed July 5, 1973, Ser. No. 376,509**

**Int. Cl. C07f *7/08, 7/18***

**U.S. Cl. 260—448.2 N** **4 Claims**

Perfluoroalkyl silyl sulfides are prepared by reacting $R_fCH{=}CH_2$ with $HSRSI^-{=}$ in the presence of a free radical generator such as organic peroxides. The products are useful for treating fabrics to render them oleophobic and water repellent. For example, trifluoropropene is added to mercaptopropyltrimethoxysilane to give

$$CF_3CH_2CH_2S(CH_2)_3Si(OCH_3)_3$$

This can be hydrolyzed to the siloxane

$$CF_3CH_2CH_2S(CH_2)_3SiO_{1.5}$$

3,794,673

## NOVEL ORGANOSILICON ADDUCTS

Robert P. Boersma, and Vincent T. Chuang, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 30, 1971, Ser. No. 129,561

Int. Cl. C07f 7/08

U.S. Cl. 260—448.2 B 9 Claims

This invention relates to a novel process for producing organosilicon hydroxy compounds by reacting a hydrosilicon compound with the reaction product of an enol ether and an olefinically unsaturated compound containing a hydroxyl group to produce an organosilicon adduct and then hydrolyzing the organosilicon adduct. The invention also relates to the organosilicon adducts (e.g., organosilicon acetals and esters) as novel compositions of matter. The novel process circumvents various side reactions that occur in other methods for producing organosilicon hydroxy compounds from hydrosilicon compounds.

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3,794,674

## PRODUCTION OF ISONITRILES

Peter Hoffmann, Cologne, and Dieter Marquarding, Leverkusen, Germany, Var Ugi, Los Angeles, Calif., and Dieter Arlt and Hermann Hagemann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,178

Claims priority, application Germany, Dec. 16, 1969, P 19 62 898.9

Int. Cl. C07c 121/12

U.S. Cl. 260—465 B 9 Claims

In the production of an isonitrile by the reaction of a formamide with phosgene in the presence of an aqueous base, the improvement which comprises effecting said reaction in the presence of a catalytic amount of a tertiary amine.

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3,794,675

## EXTRACTION OF PROSTAGLANDINS

Ramon D. Hamilton, Portage, and William P. Schneider, Kalamazoo Township, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 71,432, Sept. 11, 1970. This application July 2, 1971, Ser. No. 159,479

Int. Cl. C07c 51/48, 67/06

U.S. Cl. 260—468 D 14 Claims

An improvement in a process for isolating prostanoic acid derivatives, including $PGA_2$, $PGA_2$ methyl ester, $PGA_2$ acetate methyl ester, and their 15$\beta$-epimers from marine invertebrates. The products are useful for pharmacological purposes and as intermediates for the preparation of other prostanoic acid derivatives with pharmacological uses.

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3,794,676

## PROCESS FOR N-MONOMETHYLATING CERTAIN ACYL OR CARBALKOXY NITRO-P-PHENYLENEDIAMINES

Alexander Halasz, Norwalk, Conn., assignor to Clairol Incorporated, New York, N.Y.

No Drawing. Original application May 13, 1968, Ser. No. 728,786, now Patent No. 3,591,638. Divided and this application Jan. 12, 1971, Ser. No. 105,953

Int. Cl. C07c 125/06

U.S. Cl. 260—471 C 7 Claims

N-monomethylates certain acyl or carbalkoxy nitro-p-phenylenediamine compounds by reacting said nitro-p-phenylenediamine compounds with a mixture containing formaldehyde or paraformaldehyde and sulfuric acids.

3,794,677

## DI(LOWER)ALKYLAMINO- AND HETEROAMINO-(LOWER)ALKYL-ALPHA,ALPHA,ALPHA-TRIFLUORO-M-TOLUIC ACID ESTERS AND DERIVATIVES

William F. Bruce, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 1, 1971, Ser. No. 159,057

Int. Cl. C07c 93/20

U.S. Cl. 260—477 5 Claims

This invention discloses new and novel di(lower)-alkylamino- and heteroamino(lower)alkyl-$\alpha,\alpha,\alpha$-trifluoro-m-toluic acid esters and derivatives thereof including acid addition salts and quaternary ammonium compounds. The compounds have utility as central nervous system depressants useful in the calming of animals.

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3,794,678

## (1,4-CYCLOHEXADIEN-1-YL)ACETIC ACID

William Dvonch, Radnor, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 22, 1969, Ser. No. 843,802

Int. Cl. C07c 61/16

U.S. Cl. 260—514 L 1 Claim

This invention concerns (1,4-cyclohexadien-1-yl) alkanoic acids which are useful as anti-inflammatory agents. Further, these compounds are also useful intermediates in the preparation of synthetic 6-(1,4-cyclohexadien-1-ylamido)penicillanic acids and 7-(1,4-cyclohexadien-1-ylamido)-cephalosporanic acids which have potent activity against penicillin resistant staphylococci.

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3,794,679

## PREPARATION OF MONOHALOACETYL HALIDES

Virgil W. Gash and Donald E. Bissing, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 185,396, Sept. 30, 1971. This application July 31, 1972, Ser. No. 276,282

The portion of the term of the patent subsequent to Sept. 11, 1990, has been disclaimed

Int. Cl. C07c 51/58, 53/20

U.S. Cl. 260—544 Y 2 Claims

A process for the preparation of monohaloacyl halides by halogenating ketenes in the presence of a glycol ester.

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3,794,680

## PREPARATION OF PURE (±)-TRANS-CHRYSANTHEMIC ACID

Masano Matsui, Tokyo, and Kenzo Ueda, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,088

Claims priority, application Japan, Mar. 22, 1969, 44/21,903

Int. Cl. C07c 61/16

U.S. Cl. 260—514 H 3 Claims

A process for obtaining (±)-trans-chrysanthemic acid from a mixture of (±)-trans- and (±)-cis-chrysanthemic acids which comprises treating said mixture in the presence of an acid catalyst under non-aqueous condition. The acid catalyst is Lewis acid such as boron trifluoride, stannic chloride, ferric chloride and zinc chloride, an inorganic acid such as sulfuric acid and phosphoric acid, organic strong acid such as p-toluenesulfonic acid and trifluoroacetic acid, and the like.

3,794,681

## PROCESS FOR THE PREPARATION OF L-α-HYDRAZINO-β-PHENYLPROPIONIC ACIDS

Meyer Sletzinger, North Plainfield, Sandor Karady, Elizabeth, Manuel G. Ly, New Brunswick, and Seemon H. Pines, Murray Hill, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,770, now Patent No. 3,676,480. Divided and this application June 24, 1971, Ser. No. 156,556

Int. Cl. C07c *101/72*

U.S. Cl. 260—519 1 Claim

Process for preparing L-α-hydrazino-β-phenylpropionic acids by aminating L-α-acylamino-β-phenylpropionitrile with chloramine or methoxyamine followed by acid hydrolysis to form the L-α-hydrazino-β-phenylpropionic acid compounds.

3,794,682

## HYDRATION OF NITRILES

William Austin Barber, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,197

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N 6 Claims

Heterogeneous catalysts for amide synthesis by hydration of a nitrile with water comprise oxide of cobalt and mixed metal oxides of cobalt and another metal selected from iron, aluminum, zinc, calcium, manganese and mercury. A preferred method of making the catalyst is to coprecipitate the mixed metals as oxalates then decompose with heat. A 50% cobalt 50% manganese mixed oxide is a preferred catalyst for hydration of acrylonitrile to make acrylamide.

3,794,683

## HALOCARBOXYLIC ACID ANILIDES

Gustav Gassner, Kelkheim, Taunus, Gerhard Horlein, Frankfurt am Main, and Hans Rochling, Altenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

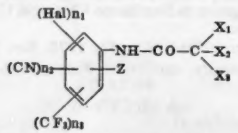
No Drawing. Filed Aug. 24, 1971, Ser. No. 174,564

Claims priority, application Germany, Aug. 26, 1970, P 20 42 300.1

Int. Cl. C07c *103/32*

U.S. Cl. 260—562 B 4 Claims

The invention provides substituted halocarboxylic acid anilides of the general formula A



A

in which $X_1$ and $X_2$ stand for chlorine, fluorine or bromine, $X_3$ represents hydrogen, chlorine, fluorine, bromine or $CHCl_2$, Z means $NO_2$ or $CF_3$, Hal represents identical or different halogen atoms, preferably chlorine, bromine or fluorine, $n_1$ being zero or 1 or 2 or 3, $n_2$ being zero or 1 or 2, $n_3$ being zero or 1 or 2, and the sum of $n_1+n_2+n_3$ is an integer in the range of from 1 to 4. The novel compounds have a good herbicidal effect against a series of mono- and dicotyledons.

3,794,684

## ACYLATION OF 2,6-DIOXIMINOCYCLOHEXANONE AND THE MONOSODIUM SALT THEREOF

Tucker T. Yee, Wilmington, Del., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Original application July 3, 1969, Ser. No. 839,061, now abandoned. Divided and this application Nov. 19, 1971, Ser. No. 200,513

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 AE 2 Claims

Method for the acylation of 2,6 - dioximinocyclohexanone and the monosodium salt thereof by the use of either a ketene or a carboxylic acid anhydride in the absence of catalyst.

3,794,685

## 1-SUBSTITUTED BIGUANIDES

Julius Diamond, Lafayette Hill, George H. Douglas, Paoli, and Bernard J. Burns, Philadelphia, Pa., assignors to William H. Rorer Inc., Fort Washington, Pa.

No Drawing. Original application Nov. 12, 1970, Ser. No. 89,005. Divided and this application Apr. 27, 1972, Ser. No. 248,004

Int. Cl. C07c *129/08*

U.S. Cl. 260—565 7 Claims

Novel 1-aryl and aralkyl biguanide compounds have been prepared. The compounds of this invention possess useful gastric antisecretory and spasmolytic properties. Compounds of this type which also display antihypertensive and CNS depressant properties are also disclosed.

3,794,686

## PROCESS FOR CONTINUOUSLY PRODUCING ACETYLACETONE

Hellmuth Spes and Gerhard Kunstle, Burghausen-Obb, and Herbert Siegl, Haiming-Obb, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

Filed Sept. 27, 1971, Ser. No. 183,855

Claims priority, application Germany, Sept. 25, 1970, P 20 47 320.5

Int. Cl. C07c *49/20*

U.S. Cl. 260—595 5 Claims

A process for continuously producing acetylacetone which comprises thermally rearranging vaporous isopropenyl acetate at a temperature of 300–600° C. in the presence of at least one lead tetraalkyl of the formula

where the alkyl groups $R_1$, $R_2$, $R_3$ and $R_4$ are equal or different and denote methyl or ethyl, and then cooling, condensing and distilling the reaction vapors.

3,794,687

## SUBSTITUTED BIS(FLUOROALKYLSULFONYL) HALOMETHANES

Robert J. Koshar, Lincoln Township, Washington County, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,534

Int. Cl. C07c *147/02*

U.S. Cl. 260—607 A 3 Claims

Non-acidic substituted bis(fluoroalkylsulfonyl)-halomethanes of the formula WY generate acid on heating or

exposure to ultraviolet light and are useful as oxidizing agents, halogenating agents and as latent catalysts for the polymerization of epoxides, vinyl ethers and N-vinyl compounds.

In these compounds, W is halo-bis(fluoroalkylsulfonyl) methyl and Y is a hydrocarbon radical which when substituted by a halogen or a lower alkoxy substituent may be of up to about 25 carbon atoms and when unsubstituted or omega alkenyl may be of up to 18 carbon atoms or Y may be halogen of atomic weight 35 to 80 inclusive as a hydrocarbon group Y may be straight, branched or cyclic.

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**3,794,688**
**1-CHLORO-1-HYDRO-PERFLUOROBUTYL DIFLUOROMETHYL ETHER**
**Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.**
**No Drawing. Original application Oct. 7, 1971, Ser. No. 187,572, now Patent No. 3,749,798. Divided and this application Oct. 6, 1972, Ser. No. 295,631**
**Int. Cl. C07c *43/00***
**U.S. Cl. 260—614 F** **1 Claim**

1-chloro-1-hydroperfluorobutyl difluoromethyl ether of the formula

$$CF_3—CF_2—CF_2—CHCl—O—CHF_2$$

is useful as an inhalation anaesthetic.

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**3,794,689**
**NOVEL DIETHYNYLCARBINOLS AND ETHERS**
**Robert D. Dillard, Zionsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**
**No Drawing. Continuation-in-part of application Ser. No. 19,078, Mar. 12, 1970, which is a continuation-in-part of application Ser. No. 827,899, May 26, 1969, now abandoned. This application May 17, 1972, Ser. No. 254,261**
**Int. Cl. C07c *33/06***
**U.S. Cl. 260—618 E** **8 Claims**

. Diethynylbenzyl alcohols and ethers useful as soil fungicides and seed-treatment agents.

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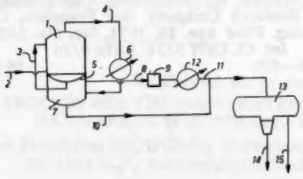
**3,794,690**
**METHOD FOR THE RECOVERY OF ISOBUTYLENE**
**Willem A. Steggerda, Leiderdorp, Netherlands, assignor to Compagnie Francaise de Raffinage, Paris, France**
**Filed June 14, 1972, Ser. No. 262,791**
**Claims priority, application France, June 18, 1971, 7122304**
**Int. Cl. C07c *11/00***
**U.S. Cl. 260—677 A** **2 Claims**



A method for total recovery of isobutylene, particularly useful in the "weak" (50%) $H_2SO_4$ extraction process, from a mixed $C_4$ stream of cracked petroleum gases where the efflux from the acid regenerator comprises isobutylene, tertiary butyl alcohol, lower isobutylene polymers, water and $H_2SO_4$ comprising treating the efflux in a caustic soda scrubbing tower to remove $H_2SO_4$, liquefying the vapors (preferably by first partially condensing the vapors with flash distillation to give residual vapors containing about 99% of the total isobutylene and then compressing and condensing the residual vapors), settling the resulting liquid, separating the resulting aqueous phase and the organic phase (which latter contains all the isobutylene) and concentrating the isobutylene by known means.

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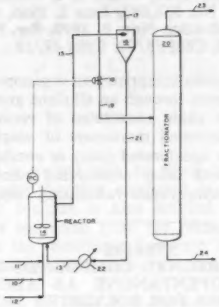
**3,794,691**
**METHOD FOR RECYCLE OF ALKYLATION CATALYSTS**
**Rolland E. Dixon and John H. Randall, Bartlesville, Okla., assignors to Phillips Petroleum Company**
**Filed Sept. 2, 1971, Ser. No. 177,358**
**Int. Cl. C07c *3/52***
**U.S. Cl. 260—683.43** **4 Claims**




Reaction product catalyst mixture is discharged from an alkylation reaction at a pressure sufficient to effect the separation of the catalyst and the alkylation product in a separator located at a height above the reactor sufficient to produce a liquid head pressure of separated catalyst that is adequate to return the catalyst to the reaction zone without the use of a pumping means in the catalyst return line. In a preferred embodiment the difference in elevation of the reaction zone and the separating zone coupled with the difference in the density of the reaction effluent mixture and the separated catalyst is sufficient to allow the catalyst to be separated in a cyclone separator and returned from the separator through a cooling zone to the reaction zone without use of a pump in the return line.

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**3,794,692**
**PROCESS FOR THE PRODUCTION OF SQUALENE-TYPE-HYDROCARBONS**
**Akira Komatsu, Susumu Akutagawa, Toshiaki Sakaguchi, and Taichi Someya, Tokyo, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan**
**No Drawing. Filed May 24, 1973, Ser. No. 363,700**
**Int. Cl. C07c *11/00, 11/14***
**U.S. Cl. 260—677 R** **14 Claims**

Production of squalene-type-hydrocarbons by dimerizing conjugated diene compounds in a aliphatic alcohol in the presence of a catalyst consisting of bis-cyclooctadiene-nickel and a tri-alkyl phosphine.

3,794,693

## MODIFIED POLYARYLENE POLYETHER RESIN COMPOSITIONS

Robert L. Lauchlan, Granger, Ind., and Hugh E. Snodgrass, Arcadia, Calif., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,409
Int. Cl. C08g 43/02
U.S. Cl. 260—823 11 Claims

Blends of a polyarylene polyether resin with a poly-(epihalohydrin) provide thermoplastic compositions characterized by unique properties, particularly, an unusually useful combination of high impact strength, high tensile strength and high flexural moduli, and excellent flame resistance.

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3,794,694

## ROOM TEMPERATURE VULCANIZABLE GRAFT COPOLYMERS ON SILICONE CONTAINING BACKBONE

Rajendra Nath Chadha, Farmingdale, N.Y., and James Edwin Crawford, Adrian, and John Charles Getson and Richard Newton Lewis, Tecumseh, Mich.; said Chadha, said Lewis and said Getson assignors to Stauffer Chemical Company

No Drawing. Continuation-in-part of application Ser. No. 849,541, July 14, 1969, which is a continuation of application Ser. No. 554,683, June 2, 1966, now abandoned. This application Nov. 9, 1970, Ser. No. 88,145
Int. Cl. C08f 35/02; C08g 47/10
U.S. Cl. 260—827 11 Claims

A liquid composition comprising an organopolysiloxane having grafted thereto through an alkylene group a polymeric organic side chain constituted of recurring units derived from unsaturated monomers of vinyl aromatic compounds and/or unsaturated esters or combinations of these monomers with other unsaturated monomers and its use as a room-temperature-vulcanizing composition.

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3,794,695

## USE OF β-DICARBONYL COMPOUNDS DERIVED FROM CYCLOPENTANONE AS ADDITIONAL ACCELERATORS FOR POLYESTER MOULDING AND COATING MASSES

Claus Burkhardt, Krefeld, Karl Raichle, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 30,335, Apr. 20, 1970. This application Nov. 26, 1971, Ser. No. 202,622
Claims priority, application Germany, May 29, 1969, P 19 27 320.2
Int. Cl. C08f 21/02
U.S. Cl. 260—863 6 Claims

According to the invention hardening of polyester moulding and coating masses of unsaturated polyesters and copolymerizable ethylen compounds containing hydroperoxide catalysts and soluble cobalt accelerators is further accelerated by the addition of small amounts of β-dicarbonyl compounds derived from cyclopentanone.

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3,794,696

## BLENDS OF ETHYLENE-PROPYLENE RUBBERS AND $C_5$–$C_{10}$-ALPHA-OLEFIN POLYMERS

Joginder Lal, Akron, and Paul H. Sandstrom, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 1, 1971, Ser. No. 158,716
Int. Cl. C08f 29/12
U.S. Cl. 260—897 A 11 Claims

Blends of ethylene-propylene rubber (EPM) or ethylene-propylene-diene rubber (EPDM) with polymers of $C_5$–$C_{10}$ α-olefin or polymers of (a) at least 80% of a $C_5$–$C_{10}$ α-olefin and (b) up to 20% of a $C_5$–$C_{30}$ nonconjugated diene or polyene (when employing a sulfur cure) result in rubber compounds possessing tack, extrudability, and/or processibility superior to that of either component. The weight ratio of EPM or EPDM to such polymer is between 95:5 and 5:95.

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3,794,697

## MODIFIED STYRENE POLYMERS PROVIDING IMPACT-RESISTANT MOLDED ARTICLES

Klaus Bronstert, Carlsberg, and Ernst-Guenther Kastning, deceased, by Marie-Louise Hermine Kastning, heir, Assenheim, Joachim Kurze, Dossenheim, Volker Ladenberger, Schwetzingen, and Dieter Stein, Limburgerhof, Germany; said Bronstert, said Joachim, said Volker and said Stein assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 22,703, Mar. 25, 1970. This application Jan. 26, 1972, Ser. No. 221,022
Claims priority, application Germany, Mar. 26, 1969, P 19 15 369.6
Int. Cl. C08f 41/12
U.S. Cl. 260—876 R 5 Claims

Thermoplastic molding compositions comprising a mixture of two rubber-modified styrene polymers A and B. Component A consists of conventional impact-resistant polystyrene made by polymerizing styrene in the presence of a rubber component B consists of a graft polymer made by polymerizing styrene in the presence of a metallized diene polymer. The compositions have particularly high impact resistance and are therefore preferred for the manufacture of utility articles where this property is desirable.

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3,794,698

## POLYETHYLENE CONTAINING EXTRUSION COATING COMPOSITIONS

Juan C. Diaz and Robert A. Mears, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 74,928, Sept. 23, 1970. This application Mar. 9, 1972, Ser. No. 233,290
The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed and dedicated to the Public
Int. Cl. C08f 29/12
U.S. Cl. 260—897 R 27 Claims

Polyethylene containing extrusion coating compositions having an improved balance of properties are obtained from a blend of polyethylene and DAC-B resin. These extrusion coating compositions provide compositions that can be applied to various substrates at reduced melt temperatures with good adhesion between the coating and the substrate and have substantially no imperfections in the coating.

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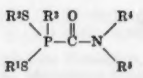
3,794,699

## N-(S,S-DIALKYLDITHIOPHOSPHO) UREAS

Francis J. Freenor III, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,464
Int. Cl. C07f 9/24; A01n 9/36
U.S. Cl. 260—938 10 Claims

Compounds of the formula



wherein $R^1$ and $R^2$ independently are alkyl of 3 to 10 carbon atoms; $R^3$ and $R^4$ independently are alkyl of 1 to 6 carbon atoms or monocyclic aryl of 6 to 10 carbon atoms and substituted with up to 4 fluoro or chloro groups and up to 2 nitro groups and $R^5$ is hydrogen or alkyl of 1 to 6 carbon atoms, with the proviso that at least one $R^3$ or $R^4$

group has at least 3 carbon atoms, and with the further proviso that $R^1$ and $R^2$ together can form a divalent alkylene group of 2 to 3 carbon atoms.

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**3,794,700**

## PROCESS FOR THE PREPARATION OF METHYL-THIONOPHOSPHONATES

**Richard Sehring and Wolfgang Buck, Ingelheim (Rhine), Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany**

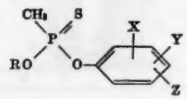
**No Drawing. Filed Apr. 18, 1972, Ser. No. 245,179**

**Claims priority, application Germany, Apr. 19, 1971, P 21 18 861.4; Feb. 2, 1972, P 21 04 777.4, Feb. 7, 1972, P 22 05 564.7**

**Int. Cl. C07f 9/40, 9/41**

**U.S. Cl. 260—986** **4 Claims**

A process for the preparation of methyl-thionophosphonates of the formula

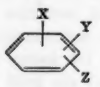


wherein

X and Y are each hydrogen, halogen or alkyl,

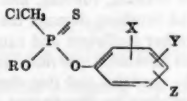
Z is hydrogen, halogen, alkyl, cyano, alkylthio, alkylsulfinyl, alkylsulfonyl, carboalkoxy, carbamoyl, sulfamoyl, alkylaminocarboxy, N-(mono- or di-) alkyl sulfamoyl or N-(mono- or di-)alkyl carbamoyl, and

R is alkyl or



where X, Y and Z have the same meaning as defined above;

in general, the alkyl moieties are lower to medium alkyl, preferably methyl, ethyl or propyl; consisting essentially of the steps of reducing a compound of the formula



wherein X, Y, Z and R have the same meaning as above, with zinc and an organic acid at an elevated temperature.

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**3,794,701**

## PROCESS FOR THE PREPARATION OF HEXA-ALKOXYPHOSPHAZENE

**Joannes Dominicus Bik, De Steeg, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands**

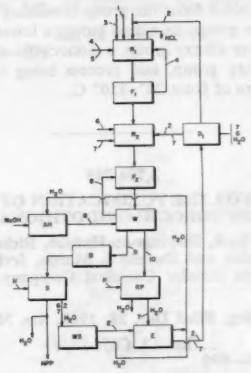
**Filed May 15, 1972, Ser. No. 253,608**

**Claims priority, application Netherlands, May 17, 1971, 6,772/71**

**Int. Cl. C07f 9/22, 9/24, 9/26**

**U.S. Cl. 260—973** **5 Claims**

An improved process for the preparation of hexa-alkoxyphosphazene is disclosed. Hexachlorophosphazene is initially formed by reacting phosphorus chloride and ammonium chloride in the presence of chlorobenzene as a solvent. The resulting solid components are isolated, ordinarily by filtration. The remaining mixture is then reacted with a monovalent alkanol (propanol is preferred) and pyridine. The pyridine hydrochloride which



is formed is treated with an alkali hydroxide to give a pyridine-water fraction employed in pyridine regeneration. This fraction is also isolated. Hexa-alkoxyphosphazene is recovered from the remaining organic fraction while the resulting solvent-rich liquid phase is distilled to allow pyridine recovery.

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**3,794,702**

## PROCESS FOR THE PRODUCTION OF O,O-DIMETHYL-O-1,2 - DIBROMO - 2,2-DICHLOROETHYLPHOSPHATE

**Kennosuke Imamura, Tokyo, Shukichi Nabekawa, Funabashi, Itaru Otsubo, Tokyo, and Hisashi Kasuya, Ohmiya, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan**

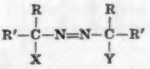
**No Drawing. Continuation of application Ser. No. 833,157, June 13, 1969. This application Jan. 24, 1972, Ser. No. 220,360**

**Claims priority, application Japan, July 15, 1968, 43/49,046**

**Int. Cl. C07f 9/08**

**U.S. Cl. 260—986** **19 Claims**

A process for the preparation of O,O-dimethyl-O-1,2-dibromo-2,2-dichloroethyl phosphate which comprises brominating O,O-dimethyl-O-dichlorovinyl phosphate in in the presence of an azo catalyst represented by the formula:



wherein R and R′ each represents a member selected from the group consisting of an alkyl group of from 1 to 10 carbon atoms, a substituted alkyl group of from 1 to 10 carbon atoms, a monocyclic aryl group, a substituted monocyclic aryl group, an aralkyl group having from 7 to 12

carbon atoms, a substituted aralkyl group having from 7 to 12 carbon atoms, and a cycloalkyl group having from 3 to 8 carbon atoms in the ring; R and R' taken together with the carbon atom to which they are attached representing a cycloalkyl group having from 3 to 7 carbon atoms in the ring; and X and Y representing a member selected from the group consisting of an alkoxycarbonyl and a cyano group, said substituents of said substituted alkyl, monocyclic aryl, and aralkyl group being members selected from the group consisting of a halogen atom, a nitro group, an amino group, a lower alkyl amino group, a lower alkoxy group, a monocyclic aryloxy group, and a carboxy group, said process being carried out at a temperature of from 20°–150° C.

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### 3,794,703

### PROCESS FOR THE PURIFICATION OF DIALKYL PHOSPHOROCHLORIDOTHIONATES

**Thomas M. Beck, Hastings-on-Hudson, Richard J. Eletto, White Plains, and Donald J. Martin, Irvington, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.**

**No Drawing. Filed Dec. 22, 1969, Ser. No. 887,407**

**Int. Cl. C07f *9/14***

**U.S. Cl. 260—990** **8 Claims**

The present invention provides a process for the purification of dialkyl phosphorochloridothionates. The process comprises adding a dialkyl phosphorodithioic acid to a dialkyl phosphorochloridothionate solution containing impurities in a sufficient amount to react with at least one of the impurities to form the dialkyl phosphorochloridothionate, and separating the phosphorochloridothionate in a substantially pure state from the remaining impurities in solution.

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### 3,794,704

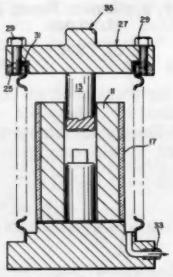
### METHOD OF FORMING REFRACTIVE OPTICAL ELEMENTS FOR INFRARED RADIATION

**John D. Strong, 136 Gray St., Amherst, Mass. 01002**

**Filed Nov. 17, 1971, Ser. No. 199,510**

**Int. Cl. B29d *11/00***

**U.S. Cl. 264—1** **8 Claims**



In the method disclosed herein, infrared optical elements are formed by hot forging a boule grown from a molten alkali halide. The *boule* is heated to a temperature at which naturally occurring surface fissures in the particular alkali halide will not propagate and is then worked between a pair of die components to conform the boule to the desired shape.

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### 3,794,705

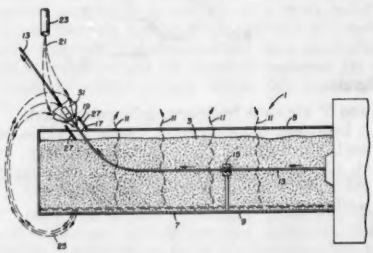
### METHOD FOR REMOVAL OF FLUIDIZED BED PARTICLES FROM EXTRUDED POLYMERIC PRODUCTS PROCESSED THEREIN

**Robert E. Harley, Tallmadge, Ohio, assignor to The General Tire & Rubber Company**

**Original application Nov. 9, 1970, Ser. No. 87,669, now abandoned. Divided and this application Sept. 13, 1972, Ser. No. 288,865**

**Int. Cl. B29c *25/00, 29/00;* B29h *19/00***

**U.S. Cl. 264—37** **4 Claims**



In processing, i.e., heating, cooling, or vulcanizing, extruded polymeric products in fluidized beds, particles from the bed stick to the surface of the product. These particles cause problems in subsequent handling and finishing. Present methods of removing these adhered particles include air blasting, rubbing, and brushing the surface; rubbing and brushing damage the product's surface whereas air is rather inefficient and causes contamination of the bed. This invention provides an efficient process for removing the particles and that does not damage the surface of the product by directing at an angle of about 25° to 30° a stream of an elastic fluid such as air and fluidized bed particles against the surface of the oncoming extruded product.

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### 3,794,706

### METHOD FOR BUILDING A FOAM-INFLATED TIRE

**Christopher E. Christie, Akron, and Eugene Earl Martin, Hudson, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio**

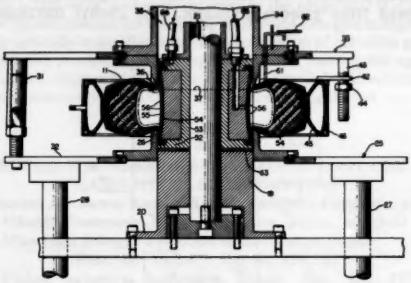
**Original application Feb. 16, 1971, Ser. No. 115,264. Divided and this application Feb. 15, 1972, Ser. No. 226,412**

**Int. Cl. B29d *27/00;* B29h *13/00***

**U.S. Cl. 264—45** **4 Claims**

An apparatus for at least partially filling a molded and vulcanized tire with foamable, elastomeric material. The

apparatus has a pair of parallel, upper and lower bead seats on which a vulcanized tire is mounted. An inflatable ring is moved into position for annularly engaging and constricting the tire to maintain the beads of the tire in firm seated relation against the bead seats. An externally, accessible chamber is movable into communicating relation with the annular cavity of the tire mounted on the bead seats. Unfoamed, elastomeric material is then placed



in the chamber and a ram is used to force the material from the chamber into the tire cavtiy. The ram carries a bladder which is centered in the space between the bead seats and inflated to compress the material within the tire cavity against the inner crown of the tire. The various components are then moved out of interfering relation with removal of the filled tire from the machine. The filled tire is then mounted on a wheel rim and heated to foam and cure the elastomeric material in the tire cavity.

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3,794,707

## PRODUCTION OF REFRACTORY ARTEFACTS

**John Sidney O'Neill, Abingdon, and Calvin Eric Silverstone, Reading, England, assignors to United Kingdom Atomic Energy Authority, London, England**

**No Drawing. Continuation of abandoned application Ser. No. 812,396, Apr. 1, 1969. This application Aug. 23, 1971, Ser. No. 174,143**

**Claims priority, application Great Britain, Apr. 3, 1968, 16,047/68; June 19, 1968, 29,296/68; Oct. 25, 1968, 50,888/68**

**Int. Cl. C04b *33/32***

**U.S. Cl. 264—56** **4 Claims**

A refractory artefact is made by taking a mix of a refractory powder with a binder or binder mixture having plastic and setting properties; forming a green artefact from the mix, e.g. by making and laying up sheets; curing the setting binder, e.g. by heat, to form a hard cured artefact; machining if necessary and then heating to sinter the artefact. The sintering step may include nitriding.

3,794,708

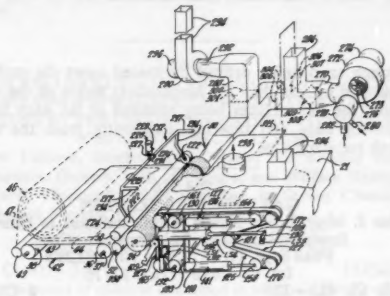
## METHOD FOR FORMING A TUBULAR FIBROUS BODY

**David O. Richards, Newark, Robert J. Beeson, Mount Gilead, and Ronald E. Kissell, Alexandria, Ohio, assignors to Owens-Corning Fiberglas Corporation**

**Continuation-in-part of application Ser. No. 125,833, Mar. 18, 1971, which is a continuation of application Ser. No. 781,732, Dec. 6, 1968, both now abandoned. This application Aug. 25, 1972, Ser. No. 283,876**

**Int. Cl. B65h *81/00***

**U.S. Cl. 156—189** **11 Claims**



A method for making a tubular fibrous body or duct section fashioned with shiplap end formations wherein the end regions of the body or section are of increased density. A mass or mat of binder-impregnated fibers, preferably mineral fibers, is wound into tubular formation on a foraminous mandrel. The fibers are compressed during the winding and a reduced pressure is established within the mandrel as an assist in collecting the fibrous mass or mat into tubular formation. A thermal treatment is then administered to the tubular body or duct section while rotating the same on the mandrel to cure the binder. Narrow end regions of the tubular body or duct section are compressed to a higher density than the main body or sections during the winding.

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3,794,709

## METHOD FOR REDUCING SURFACE CRACKING IN EXTRUDED PLASTIC MATERIAL

**Eric G. Bengtson, Closter, and Lynn H. Lander, Ridgefield, N.J., assignors to Lever Brothers Company, New York, N.Y.**

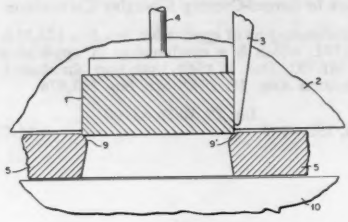
**Filed Feb. 12, 1971, Ser. No. 114,945**

**Int. Cl. C11d *13/14, 13/28***

**U.S. Cl. 264—323** **1 Claim**

Method for end-shaping blanks of soap cut from extruded logs preliminary to die box pressing by subjecting

the cut end surfaces of the blanks to transverse shear in order to bend and compress the flow lines at the cut ends exposed and opened by segmenting the extruded log, the transverse shear being provided by forcing the soap blank




through an opening defined by spaced apart die surfaces separated by less than the longitudinal length of the soap blank, the die surfaces being rounded at the soap blank receiving edge and tapering divergently from the soap blank receiving edge.

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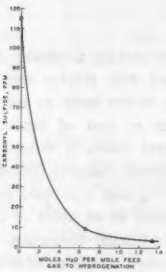
**3,794,710**

## GAS DESULFURIZATION

**John J. Merrill, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.**

**Filed Sept. 17, 1971, Ser. No. 181,395**
**Int. Cl. C01b *17/04, 17/16***
**U.S. Cl. 423—220** **6 Claims**




A process for removing sulfur compounds from sulfur plant tail gases comprising $SO_2$, COS, $CS_2$, entrained and vaporized S, and $H_2S$ which comprises:

(a) oxidizing the tail gas stream to convert COS, $CS_2$ and entrained and vaporized S to $SO_2$ and $CO_2$, and thereby obtain an oxidized gas stream comprising $SO_2$ and $CO_2$,

(b) feeding the oxidized gas stream to a hydrogenating zone and therein hydrogenating the oxidized gas stream by a process which comprises contacting the oxidized gas stream with a hydrogenation catalyst at a temperature between 400° and 900° F., and in the presence of hydrogen gas to obtain a hydrogenated gas stream comprising $H_2S$ and $CO_2$,

(c) scrubbing $H_2S$ from the hydrogenated gas stream to obtain a purified stream.

It is particularly preferred to maintain at least 0.4 mole $H_2O$ in the oxidized gas stream fed to the hydrogenation zone per mole of said oxidized gas stream in order to maintain the COS concentration in the effluent from the hydrogenation zone at a very low part per million level.

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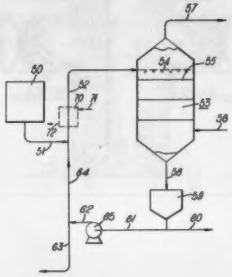
**3,794,711**

## USE OF PHENOLIC COMPOUNDS FOR THE SIMULTANEOUS ABSORPTION AND OXIDATION OF OBJECTIONABLY ODORIFEROUS SULPHUR COMPOUNDS FROM A GASEOUS STREAM

**Staya P. Bhatia, Pointe Claire, Steven Prahacs, Beaconsfield, Thomas L. de Souza, Lachine, and Herbert G. Jones, Beaconsfield, Quebec, Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada**

**Filed Apr. 27, 1971, Ser. No. 137,783**
**Claims priority, application Canada, Jan. 20, 1971, 103,183**
**Int. Cl. B01d *53/34***
**U.S. Cl. 423—224** **34 Claims**

Objectionably odoriferous sulfur compounds are removed from gaseous emissions, e.g., methyl mercaptan




and dimethyl sulfide or mixtures thereof, either alone or together with hydrogen sulfide, e.g., kraft-recovery furnace stack gases, in industrial operations. The removal is achieved by the use of alkaline or near neutral scrubbing solutions containing defined minimum amounts of certain phenolic compounds, e.g., phenol, dihydroxy phenols, trihydroxy phenols, substituted phenols and derivatives thereof as additional scrubbing agents, in the presence of gaseous oxygen. By this procedure, the absorption efficiency of the alkaline aqueous solution is increased and the hydrosulfide ions are substantially instantaneously converted to soluble sulfate and thiosulfate ions.

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**3,794,712**

## PREPARATION OF SILICA GELS

**Henri A. Aboutboul, Brussels, Belgium, Jerome H. Krekeler, Cincinnati, Ohio, and William Kirch, Clinton, Iowa, assignors to National Petro Chemicals Corporation, New York, N.Y.**

**Continuation-in-part of application Ser. No. 750,733, Aug. 6, 1968. This application Oct. 26, 1971, Ser. No. 191,977**
**The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed**
**Int. Cl. C01b *33/16***
**U.S. Cl. 423—338** **27 Claims**

Silica gels having narrow pore diameter distribution in the range of 300–600 A., surface areas in the range from 200–500 $m.^2/g.$, pore volumes of from about 2.0 to about 3.5 $cm.^3/g.$ and the process of preparing such silica gels directly from water, comprising critically controlled steps of precipitation of the silica gel, aging the precipitated silica hydrogel slurry, reducing the alkaline impurity level in the hydrogel by washing the aged product and freeze drying the hydrogel so as to remove substantially all of the water, i.e. vacuum subliming the water from the gel after freezing said hydrogel particles at a temperature sufficient to maintain the water in the pores in the frozen state.

3,794,713

## PREPARATION OF SILICA GELS

Henri A. Aboutboul, Brussels, Belgium; Jerome H. Krekeler, Cincinnati, Ohio, and William Kirch, Clinton, Iowa, assignors to National Petro Chemicals Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 750,734, Aug. 6, 1968, Pat. No. 3,652,215. This application Oct. 26, 1971, Ser. No. 191,978. The portion of the term of this patent subsequent to Mar. 27, 1989, has been disclaimed.

Int. Cl. C01b *33/16*

U.S. Cl. 423—338 30 Claims

Silica xerogels having narrow pore diameter distribution in the range of 300 – 600 A, surface areas in the range of from 200 – 500 $m^2/g$, and pore volumes in the range of 2.0 – 3.5 $cm^3/g$ and process for preparing such silica xerogels comprising critically controlled steps of precipitation of the silica gel, aging the precipitated silica hydrogel slurry, washing the aged product, displacing the water with an organic liquid substantially completely miscible with water and drying the gel.

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3,794,714

## PROCESS FOR WASHING SULFUR OXIDE-CONTAINING GASES WITH A SLURRY OF LIME

Masumi Atsukawa; Kazumi Kamei; Toshihiko Furumoto, and Nikushi Tsuneyoshi, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1971, Ser. No. 199,213

Claims priority, application Japan, Dec. 29, 1970, 45/128031

Int. Cl. C01b *17/60*

U.S. Cl. 423—242 2 Claims

A process for washing a sulfur oxide-containing gas with a slurry of lime, comprising passing the gas from a first absorbing unit to a second absorbing unit while passing a sulfur oxide absorbing liquid from the second absorbing unit to the first absorbing unit, and occasionally reversing the flow directions of the gas and the absorbing liquid, whereby attachment of a scale to the inner surfaces of said absorbing units is prevented.

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3,794,715

## SOLVENT EXTRACTION PROCESS FOR PRODUCING LOW- NITRATE AND LARGE-CRYSTAL-SIZE PUO SOLS

Milton H. Lloyd, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 30, 1972, Ser. No. 284,809

Int. Cl. C01g *43/00*

U.S. Cl. 423—251 4 Claims

Low-nitrate plutonia sols having a $NO_3$/Pu mole ratio in the range 0.1 to 0.4 with an average crystallite diameter of 30 to 80 A can be produced when a sol is prepared by solvent extraction of a plutonium nitrate seeded with a plutonia sol. When the seeded sol is taken to dryness and heated for 10 to 120 minutes at a temperature in the range 180°–230° C. in a dry sweep gas, nitrate removal occurs and the baked solid can easily be dispersed to form a stable sol.

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3,794,716

## SEPARATION OF URANIUM ISOTOPES BY CHEMICAL EXCHANGE

Pearl R. Ogle, Jr., Westerville, Ohio, assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 13, 1972, Ser. No. 288,860

Int. Cl. C01g *43/00*

U.S. Cl. 423—253 12 Claims

A chemical exchange method is provided for separating uranium-235 from uranium-238 comprising contacting a first phase containing $UF_6$ with a second phase containing a compound selected from the group consisting of $NOUF_6$, $NOUF_7$, and $NO_2UF_7$ until the $UF_6$ in the first phase becomes enriched in the U-235 isotope.

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3,794,717

## METHOD OF PREPARING COMPOUND OXIDES OF TITANIUM AND ZINC

Hajime Miyatuka, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 22, 1972, Ser. No. 236,966

Claims priority, application Japan, Mar. 26, 1971, 46-18121

Int. Cl. C01g *23/00*

U.S. Cl. 423—598 8 Claims

A method of preparing compound oxides of titanium and zinc is improved. It comprises subjecting a mixed fine powder of zinc oxide and oxides of titanium obtained from a titanic acid ester to heat treatment at temperatures not lower than 600°C.

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3,794,718

## PROCESS FOR REDUCING THE AMOUNT OF CALCIUM CONTAINED IN MAGNESIUM-BASE WASTE SULFITE LIQUOR BY THE USE OF AN AMMONIUM COMPOUND AND ADDITIONAL CALCIUM

Toivo Lahtvee, Scarborough, Ontario; Bal Krishan Sethi, Toronto, Ontario, both of Canada, and William Hubbard Stark, Cincinnati, Ohio, assignors to Spring Chemicals Limited, Toronto, Ontario, Canada

Filed Sept. 22, 1971, Ser. No. 182,832

Int. Cl. C01b *17/45, 17/46, 17/62, 17/98*

U.S. Cl. 423—512 12 Claims

The amount of calcium contained in magnesium-base waste sulfite liquor is reduced by precipitating the calcium as calcium sulfite and separating the precipitate from the remaining waste sulfite liquor solution. The precipitation is caused by dissolving in the waste sulfite liquor (1) additional calcium, i.e., beyond the amount of calcium initially contained in the waste sulfite liquor; (2) an ammonium compound selected from the group consisting of anhydrous ammonia, ammonium sulfite, aqueous ammonia, ammonium carbonate, ammonium magnesium carbonate and ammonium hydroxide; and (3) a source of sulfite ions.

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3,794,719

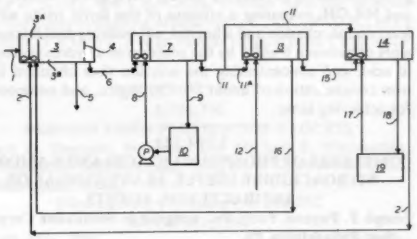
## REDUCTION OF NICKEL CONTAMINATION BY ZINC IN α-HYDROXY OXIME EXTRACT

Edward Harris Lowenhaupt, III; Edward Edmunds, Jr., and Richard Dean Eliasen, all of El Paso, Tex., assignors to S.E.C. Corporation, El Paso, Tex.

Filed Feb. 25, 1972, Ser. No. 229,328

Int. Cl. B01d *11/04;* C01g *53/00, 9/00*

U.S. Cl. 423—139 3 Claims



The amount of zinc coextracted with nickel by α-hydroxy oxime extractants is reduced by contacting said extractants with an excess of nickel ions to selectively displace zinc.

3,794,720

## PROCESS FOR PRODUCING HARD FERRITES

John David Nye, Prescott, Ontario, Canada, assignor to Ferrox Iron Ltd., Prescott, Ontario, Canada

Filed Mar. 31, 1972, Ser. No. 239,958
Int. Cl. C01g 49/00
U.S. Cl. 423—594 8 Claims

Barium, strontium or lead ferrite is produced in the usual manner by mixing together barium, strontium or lead carbonate and ferric oxide, calcining this to form the barium, strontium or lead ferrite and grinding the ferrite in slurry form in a mill to a particle size of about 1 micron average diameter. According to the invention, the barium, strontium or lead ferrite slurry before, during or after grinding in the mill has added thereto a reagent, which converts any barium, strontium or lead hydroxide present into a $CO_2$-inactive form. This prevents the hydroxide from cementing the ferrite particles together into an irreversible cement-like mass during drying and storage in the dry form.

## ERRATUM

For Class 423—515 see:
Patent No. 3,794,721

3,794,721

## ANTIBIOTIC STEFFIMYCIN B AND PROCESS FOR THE PREPARATION THEREOF

Thomas F. Brodasky, Kalamazoo, and Fritz Reusser, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 28, 1972, Ser. No. 283,908
Int. Cl. A61k 21/00
U.S. Cl. 424—120 4 Claims

New antibiotic, steffimycin B produced by the controlled fermentation of the new microorganism *Streptomyces elgreteus* Dietz sp. n. in an aqueous nutrient medium. Steffimycin B is active against Gram-positive bacteria and can be used in various environments to eradicate or control such bacteria.

3,794,722

## IRON COMPOSITION FOR TREATING ANEMIA

Miguel Margarit Taya, Manuel Girona 56, Barcelona, Spain

Continuation-in-part of Ser. No. 855,762, Sept. 5, 1969, abandoned. This application May 6, 1971, Ser. No. 140,995
Claims priority, application Spain, Nov. 20, 1968, 360433
Int. Cl. A61k 27/00
U.S. Cl. 424—147 14 Claims

A method for treating hypoferric anemia in sucking mammals, said method comprising administering orally to a sucking mammal afflicted with hypoferric anemia a trivalent iron compound prepared by forming ferric oxide from soluble ferric iron salts by reaction with a member selected from the group consisting of $Na_2CO_3$, $K_2CO_3$, $(NH_4)_2CO_3$, NaOH, KOH and $NH_4OH$, preparing a mixture of this ferric oxide with at least one saccharide and a hexitol, neutralizing said mixture to a pH of between 6 and 9 by the addition of a hydroxycarboxylic acid, and concentrating the solution thus obtained to an iron concentration of about 80–150 mg/cc, and composition for achieving same.

3,794,723

## COMPLEXES OF PHOSPHANILIC ACID AND 9-AMINO-3-NITROACRIDINE USEFUL AS ANTIFUNGAL OR ANTIBACTERIAL AGENTS

Joseph F. Pagano, Paoli, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 18,312, March 10, 1970, Pat. No. 3,694,447. This application Aug. 9, 1972, Ser. No. 278,917
Int. Cl. A01n 9/36
U.S. Cl. 424—200 9 Claims

Complexes of phosphanilic acid and an aminoacridine possess broad-spectrum antibacterial and antifungal activity when used topically. The preferred complex is a 1:1 complex of phosphanilic acid and 9-amino-3-nitroacridine.

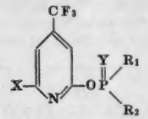
3,794,724

## USE OF SUBSTITUTED (TRIFLUOROMETHYL)PYRIDYL PHOSPHATES AND PHOSPHOROTHIOATES AS NEMATICIDES

Frances C. O'Melia, Pleasant Hill, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 99,666, Dec. 18, 1970, abandoned. This application Dec. 1, 1971, Ser. No. 203,906
Int. Cl. A01n 9/36
U.S. Cl. 424—200 13 Claims

Soil nematodes are controlled by applying to infected soil effective amounts of substituted (trifluoromethyl)pyridyl phosphates and phosphorothioates of the formula



wherein

X is bromo, chloro, fluoro or iodo;

Y is oxygen or sulfur, and

$R_1$ and $R_2$ each independently represent a member selected from the group consisting of loweralkoxy, lower-alkylthio, amino, and loweralkylamino.

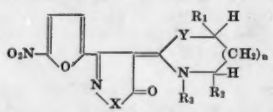
3,794,725

## PHARMACEUTICAL COMPOSITIONS CONTAINING CERTAIN 3-NITRO-FURYL-4-AZOLIDINYLIDENE-AZOLONES-5 AND METHOD OF USE

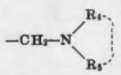
Roland Maier, Biberach/Riss, and Robert Sauter, Laupheim, both of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim/Rhine, Germany

Division of Ser. No. 177,435, Sept. 2, 1971, Pat. No. 3,717,629. This application Dec. 29, 1972, Ser. No. 319,481
Claims priority, application Germany, Sept. 11, 1970, 2045049; June 4, 1971, 2127735
Int. Cl. A61k 27/00
U.S. Cl. 424—270 11 Claims

Pharmaceutical compositions containing as active ingredients compounds of the formula



wherein $R_1$ is hydrogen, straight or branched alkyl of 1 to 6 carbon atoms, monohydroxy-(alkyl of 1 to 6 carbon atoms), or



where $R_4$ and $R_5$ are each straight or branched alkyl of 1 to 4 carbon atoms, or, together with each other and the nitrogen atom to which they are attached, morpholino, pyrrolidino, piperidino or N'-methyl-piperazino,

$R_2$ is hydrogen or alkyl of 1 to 3 carbon atoms,

$R_3$ is hydrogen, straight or branched alkyl of 1 to 5 carbon atoms, or monohydroxy-(alkyl of 1 to 5 carbon atoms),

X is oxygen, imino(—NH—) or methylimino(—$NCH_3$),

Y is oxygen, sulfur or imino, and

*n* is 0 or 1,

or, to the extent that the compounds contain one or more basic nitrogen atoms, non-toxic acid addition salts thereof; and methods of using the compositions as bactericidal

preparations against grampositive and gramnegative bacteria and against trichomonas.

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3,794,726

## INHIBITING AGGRESSIVE BEHAVIOR WITH 1,2,3-BENZOTRIAZIN-(3H)-ONE

Zaven S. Ariyan, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,311
Int. Cl. A61k 27/00
U.S. Cl. 424—249 11 Claims

1,2,3-benzotriazin-4(3H)-one is useful as an anti-aggression agent.

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3,794,727

## METHOD OF CONTROLLING COCCIDIOSIS BY THE USE OF A NITROIMIDAZOLYLTHIADIAZOLINONE

Spencer Douglas Carter, Trenton, and Gerald Berkelhammer, Princeton, both of N.J., assignors to American Cyamamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 236,232, March 20, 1972. This application May 3, 1973, Ser. No. 356,978
Int. Cl. A61k 27/00
U.S. Cl. 424—270 7 Claims

A method for controlling coccidiosis in warm-blooded animals by orally administering to said animals an edible carrier containing an effective amount of a nitroimidazolylthiadiazolinone, is described.

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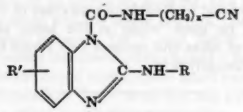
3,794,728

## N-(ω-CYANO-ALKYL)-CARBAMYL-BENZIMIDAZOLES USED AS FUNGICIDES AND ANTI-BACTERIAL AGENTS

Werner Daum, Krefeld-Bockum; Hans Scheinpflug; Paul-Ernst Frohberger, both of Leverkusen, and Ferdinand Grewe, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

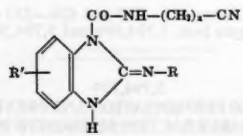
Division of Ser. No. 880,399, Nov. 26, 1969, Pat. No. 3,673,210. This application Dec. 8, 1971, Ser. No. 206,180
Claims priority, application Germany, Nov. 30, 1968, 1812005
Int. Cl. A01n 9/22
U.S. Cl. 424—273 13 Claims

Fungicidal, anti-bacterial, insecticidal, acaricidal and ovicidal compositions containing as active ingredients N-(ω-cyano-alkyl)-carbamyl-benzimidazoles of the tautomeric formulae (I):



(I')

and



(I'')

in which

*R* is hydrogen, alkoxycarbonyl having 2–5 carbon atoms or alkylcarbonyl having 1–5 carbon atoms,

*R'* is hydrogen or alkyl of 1–4 carbon atoms, and

*x* is a whole number from 1 to 11.

3,794,729

## INHIBITING BLOOD PLATELET AGGREGATION

Arnold J. Wohl, North Caldwell; Peter J. Daniels, Cedar Grove, and John G. Topliss, West Caldwell, all of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 811,200, March 27, 1969, abandoned. This application July 16, 1971, Ser. No. 163,460
Int. Cl. A61k 27/00
U.S. Cl. 424—337 22 Claims

The inhibition of undesirable blood-platelet aggregation by administration of novel pharmaceutical preparations comprising certain polyiodo- or bromo- oxydiphenyl sulfones.

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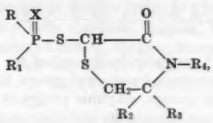
3,794,730

## CONTROL OF INSECTS WITH CERTAIN PHOSPHORUS-CONTAINING THIOMORPHOLINONES

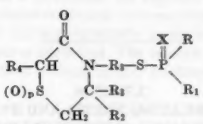
Karoly Szabo, Syracuse, N.Y., assignor to Esso Research and Engineering Company, Linden, N.J.

Division of Ser. No. 60,774, Aug. 3, 1970, Pat. No. 3,691,163. This application July 25, 1972, Ser. No. 275,113
Int. Cl. A01n 9/36
U.S. Cl. 424—200 18 Claims

Organophosphorus compounds containing the thiomorpholinone moiety have been found to be highly active both as contact and systemic insecticides and miticides. These compounds also possess excellent acaricidal activity. These compounds are represented by one of the following structural formulae:



or



wherein R and $R_1$ may be the same or different and are selected from the group consisting of $C_1$ to $C_6$ alkoxy, $C_1$ to $C_6$ alkyl, $C_2$ to $C_6$ alkoxymethyl, and $C_1$ to $C_6$ alkylthio; provided that at least one of them is alkoxy; $R_2$ and $R_3$ may be the same or different and are selected from the group consisting of hydrogen and $C_1$ to $C_6$ alkyl; $R_4$ is one selected from the group consisting of hydrogen, $C_1$–$C_6$ alkyl, $C_1$–$C_6$ alkylthio, $C_1$–$C_6$ alkoxyl and $C_1$–$C_6$ alkyl optionally substituted with hydroxyl, amino, cyano, $C_1$–$C_6$ N alkyl carbamoyl, $C_1$–$C_6$ alkoxycarbamido, substituted and unsubstituted phenyl, $C_1$–$C_6$ carboalkoxyalkyl and acetoxyl; $R_5$ is one selected from the group consisting of $(CH_2)_n$ and $CH_2$–$CHR_6$, wherein $R_6$ is one selected from the group consisting of hydrogen, $C_1$ to $C_6$ alkyl, $C_1$ to $C_6$ alkylthio; X is O or S, *n* is an integer ranging from 1 to 6 and *p* is 0-2.

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3,794,731

## PROTEIN FIBER FABRICATION PROCESS

Robert D. Dannert, Wayzata, and Michael E. Manwaring, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Apr. 21, 1972, Ser. No. 246,292
Int. Cl. A23j 3/00
U.S. Cl. 426—276 12 Claims

Protein fibers are prepared by forcing an alkaline protein solution through an orifice and simultaneously intimately contacting the protein stream with a fast acting acid gas traveling at a velocity greater than the protein stream. The fibers find particular use in meat analog preparations.

3,794,732

## RUMINANT FEED UTILIZATION IMPROVEMENT

Arthur P. Raun, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 24, 1972, Ser. No. 220,304
Int. Cl. A61k *21/00*
U.S. Cl. 424—283 7 Claims

Ruminant animals having a developed rumen function convert their feed more efficiently to energy when orally treated with an antibiotic chosen from among A204, X537A, dianemycin, monensin, nigericin, and X206 and their physiologically acceptable salts and esters.

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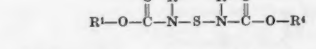
3,794,733

## N-SUBSTITUTED ARYLCARBAMOYL SULFIDES USED AS INSECTICIDES

Melancthon S. Brown, deceased, late of Berkeley, Calif., and Gustave K. Kohn, administrator, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 88,105, Nov. 9, 1970, Pat. No. 3,679,733.
This application May 15, 1972, Ser. No. 253,511
Int. Cl. A01n *9/12*
U.S. Cl. 424—300 16 Claims

Compounds of the formula



wherein $R^1$ and $R^4$ are individually aryl of six to 14 carbon atoms optionally substituted with alkyl groups, halogen atoms, nitro groups, alkoxy groups, alkylthio groups or dialkylamino groups; $R^2$ and $R^3$ are individually hydrogen or alkyl of one to four carbon atoms are used as insecticides.

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3,794,734

## METHODS OF TREATING EDEMA AND HYPERTENSION USING CERTAIN 2-AMINOETHYLPHENOLS

Edward J. Cragoe, Jr., Lansdale, and Everett M. Schultz, Ambler, both of Pa., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Mar. 3, 1971, Ser. No. 120,730
Int. Cl. A61k *27/00*
U.S. Cl. 424—330 9 Claims

2-Aminomethylphenol products and their non-toxic, pharmaceutically acceptable salts, compositions containing 2-aminomethylphenols as their active ingredient and methods useful in the treatment of edema and/or hypertension are disclosed.

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3,794,735

## EXTRACTION OF PROTEIN FROM SEED

Brian George Newsom, Pertenhall, and Michael Peter Tombs, Pavenham, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,263
Claims priority, application Great Britain, Oct. 9, 1970, 48,072/70
Int. Cl. A23j *3/00*; A23l *1/20*
U.S. Cl. 426—364 6 Claims

A process of making foodstuffs (e.g., simulated meats) by the steps of mixing a coprecipitate of protein and lipid in the presence of water with an edible water-soluble salt, then heat-setting this mixture and, during or subsequent to setting, contacting the mixture with a lipid solvent.

3,794,736

## METHOD OF INHIBITING THE GROWTH OF BACTERIA AND FUNGI USING ORGANOSILICON AMINES

Eugene A. Abbott, Freeland, and Alan J. Isquith, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sept. 19, 1971, Ser. No. 184,918
Int. Cl. A01n *9/20, 9/24*
U.S. Cl. 424—78 8 Claims

The growth of bacteria and fungi are inhibited by contacting the organisms with certain organosilicon amines and their corresponding amine salts. Specifically the compound $[(CH_3)_3SiO]_2Si(CH_2)_3NHCH_2CH_2NH_2$ kills S. aureus, E. coli, A. niger and P. aeruginosa at an M.I.C. of 100 ug/ml or less.

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3,794,737

## P-(ACETOACETAMIDOALKYL)BENZENESULFONAMIDE DERIVATIVES AS HYPOGLYCERMICAGENTS

Henri Dietrich, Arlesheim/Basel, and Claude Lehmann, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 68,797, Sept. 1, 1970, Pat. No. 3,708,493.
This application Sept. 18, 1972, Ser. No. 290,032
Claims priority, application Switzerland, Sept. 4, 1969, 13396/69
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 4 Claims

Compounds of the class of 1-[p-(acetoacetamidoalkyl)-phenylsulfonyl]-2-imino-imidazolidines and the pharmaceutically acceptable acid addition salts thereof, have hypoglycemic activity; the compounds are active ingredients of pharmaceutical compositions and can be used for the treatment of diabetes mellitus; a typical embodiment is 1-[p-(2-acetoacetamidoethyl)-phenylsulfonyl]-2-imino-3-methyl-imidazolidine.

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3,794,738

## SODIUM DITHIONITE STABILIZATION AGAINST SELF-IGNITION

Leonard C. Ellis, Chesapeake, and Mearl A. Kise, Portsmouth, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed July 26, 1972, Ser. No. 275,448
Int. Cl. C01b *17/98*
U.S. Cl. 423—515 14 Claims

To retard self-ignition of commercial grades of sodium dithionite when contacted with moisture and/or water, small but effective amounts of low concentration alkali metal and ammonium salts of diglycolic acid are added, said additive salts being beneficial to bleaching processes in which sodium dithionite may be used, while at the same time avoiding eutrophication of lakes and streams into which the bleaching effluent may ultimately flow.

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## ERRATA

For Classes 426—260 and 426—511 see:
Patents Nos. 3,794,499 and 3,794,500

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3,794,739

## CONTROLLED FERMENTATION AND PREVENTION OF UNDESIRABLE BACTERIAL GROWTH IN FOOD

Wei Hwa Lee; Hans P. Reimann, and Abdul J. Al-Mashat, all of Davis, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 26, 1971, Ser. No. 109,960
Int. Cl. A22c *18/00*; A23b *1/00*
U.S. Cl. 426—8 3 Claims

Food is inoculated with lactic acid producing bacterial cells which, though previously rendered non-viable, still have the

capacity to produce acid. If controlled fermentation of the food is desired, the inoculated food is incubated under suitable conditions. If safeguarding against food poisoning bacteria is desired, the inoculated food is refrigerated to inhibit lactic acid production. If, in the latter case, the food is subsequently exposed to higher temperatures, acid production occurs and inhibits production of food poisoning bacteria.

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3,794,740

## RUMINANT DIRECT FEEDING SUSPENSION SUPPLEMENT

**Frank P. Achorn, and J. Frank Anderson, Jr., both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.**

**Continuation of Ser. No. 191,853, Oct. 22, 1971. This application Mar. 31, 1972, Ser. No. 240,290**
**Int. Cl. A23k** *1/02, 1/22*
**U.S. Cl. 426—69** **7 Claims**

A direct feeding supplement designed to cure or prevent in ruminants low blood serum magnesium and/or calcium levels, which low levels lead to the ailment, grass tetany. In order to incorporate sufficient magnesium to do the job, the solubility limit is exceeded in the aqueous system resulting in a suspension supplement. Previously, such suspensions would gel in short order and become useless. It has now been discovered that gelling can be prevented for substantial periods of time if the ammonium polyphosphate solution component of the suspension contains greater than about 70 percent polyphosphate species therein including substantial amounts of tripoly.

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3,794,741

## FLAVOR BITS FOR INCORPORATION IN CULINARY MIXES AND PROCESS FOR MAKING SAME

**Dwight C. Weigle, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio**

**Filed Dec. 15, 1971, Ser. No. 208,391**
**Int. Cl. A23l** *1/26;* **A21d** *2/00*
**U.S. Cl. 426—156** **10 Claims**

Flavor bits for incorporation in culinary mixes are produced by mixing, by weight of the total flavor bit, 30% to 40% sugar, 20% to 30% water, 20% to 30% corn syrup, and cooking the mixture at 230°F to 320°F for 20 minutes to 1.5 hours; blending 2% to 6% of an edible cooking fat, and at least 2.5% of a suspending agent into the above mixture; cooling the blend to a temperature between 140°F and 200°F; adding a flavor material; cooling the above mixture until it becomes hard; and grinding the hardened mixture into small particles. The flavor bits exhibit excellent flavor retention and will not settle out of the culinary mixes during their preparation.

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3,794,742

## COATING COMPOSITION FOR FOODS AND METHOD OF IMPROVING TEXTURE OF COOKED FOODS

**Norman E. Harris, Waltham, and Frances H. Lee, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Mar. 21, 1972, Ser. No. 236,588**
**Int. Cl. A23b** *1/10*
**U.S. Cl. 426—302** **4 Claims**

A method of improving the texture of meat or other solid foods by reducing the loss of moisture from the foods during cooking thereof and a coating composition for such foods to be applied thereto prior to cooking, said coating composition comprising a mixture of a hydroxypropylmethylcellulose, dextrose, hydrolyzed cereal solids, and a pregelatinized tapioca starch.

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3,794,743

## METHOD OF REMOVING MELTED FATS FROM THE SURFACE OF AN EDIBLE AQUEOUS SOLUTION

**Marcella C. Stubits, St. Louis, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.**

**Filed Jan. 24, 1972, Ser. No. 220,392**
**Int. Cl. A22c** *18/00*
**U.S. Cl. 426—417** **3 Claims**

This disclosure covers a method of removing a preselected portion of the fat or oil from the surface of a vessel of aqueous fluid. An edible carbohydrate fatty acid ester in powdered form (preferably cellulose laurate) is added to the fat and absorbs several times its own weight in fat. The fat laden cellulose laurate is removed from the fluid in the vessel, and, if the fat is extracted from the cellulose laurate; it can be reused.

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3,794,744

## PURIFICATION OF HOP EXTRACTS

**David Stanley John Gardner, Reigate, England, assignor to White Tomkins Limited,, Reigate, Surrey, England**

**Filed May 10, 1972, Ser. No. 252,342**
**Int. Cl. A23l ; C12h** *1/00*
**U.S. Cl. 426—424** **7 Claims**

Xanthohumol is removed from a hop extract solution by treatment with a polyamide, for example by passing the solution down a chromatographic column of polyamide or by slurrying together and separating the insoluble polyamide. Polyvinyl pyrrolidone is preferred. The treated extract can be used in brewing with or without further treatment.

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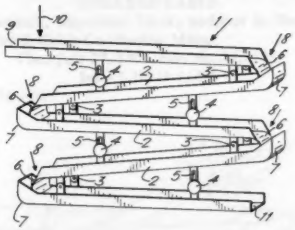
3,794,745

## PROCESS FOR FRYING BUOYANT FOOD PIECES

**Arie Leendert Boertje, Hoogeveen, Netherlands, and Peter John Philpott, Felmersham, England, assignors to Lever Brothers Company, New York, N.Y.**

**Filed Nov. 17, 1971, Ser. No. 199,735**
**Int. Cl. A23l** *1/12, 1/00*
**U.S. Cl. 99—100 P** **1 Claim**



A buoyant foodstuff is fried in heated oil during its

downward flow therewith through a plurality of successively sloping channels.

## ERRATUM

For Class 426—276 see:
Patent No. 3,794,731

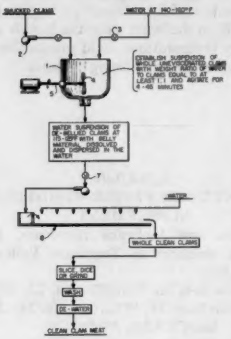
## 3,794,746
## METHOD FOR OBTAINING CLEAN MEAT OF NATURAL COLOR FROM WHOLE CLAMS

**Ronald K. Finley, Towson; Donald J. Langlois, Pasadena, both of Md.; Robert H. Nicholson, and Herschel F. Porter, both of Lewes, Del., assignors to Doxsee Food Corporation, Baltimore, Md.**

**Filed Aug. 21, 1972, Ser. No. 282,017**
**Int. Cl. A22c** *25/00*

**U.S. Cl. 426—479** **6 Claims**

Clean clam meat in subdivided form and having its natural color is obtained by physically working shucked whole uneviscerated clams, in the presence of at least enough aqueous liquid to render the clams pumpable, in order to rupture the belly membrane, maintaining the clams suspended in an aqueous liquid at at least 100° F. for 4–45 minutes to cause the entire belly material to be dissolved and dispersed in the liquid, and recovering, promptly washing and subdividing the debellied clams.



# ELECTRICAL

## ERRATUM

For Class 426—364 see:
Patent No. 3,794,735

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### 3,794,747
### ELECTRONIC MUSICAL INSTRUMENT

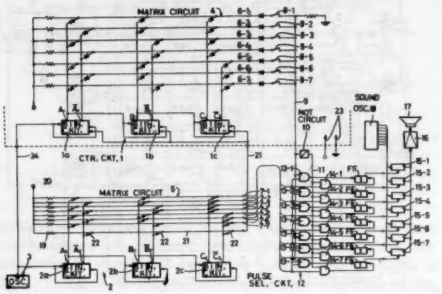
**Nobuharu Obayashi, Shizuoku-ken, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamatsu-shi, Shizuoka-ken, Japan**

**Filed May 9, 1972, Ser. No. 251,796**

**Claims priority, application Japan, May 11, 1971, 46-30858. The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.**

**Int. Cl. G10h** *1/00*

**U.S. Cl. 84—1.01** **9 Claims**




An electronic musical instrument comprising an oscillator, first and second multiplex counter circuits synchronously driven in common by said oscillator, first and second matrix circuits coupled respectively to said counter circuits for producing respective sequences of pulses, a common conductor, said matrix circuits including a plurality of output terminals, switches connecting the output terminals of said first matrix circuit to said conductor, a pulse selective circuit coupled to said conductor and to the output terminals of said second matrix circuit, sound means, and gating means controlled by said pulse selective circuit to control the output of said sound means.

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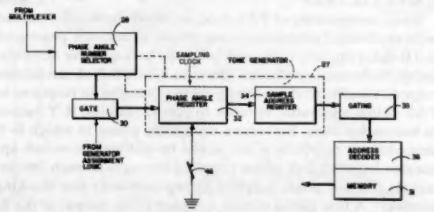
### 3,794,748
### APPARATUS AND METHOD FOR FREQUENCY MODULATION FOR SAMPLED AMPLITUDE SIGNAL GENERATING SYSTEM

**Ralph Deutsch, Sherman Oaks, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.**

**Filed Dec. 6, 1971, Ser. No. 205,092**

**Int. Cl. G10h** *1/02*

**U.S. Cl. 84—1.24** **13 Claims**




A memory contains data in a plurality of discrete locations and is addressed at a rate that depends upon desired spacing between data from various locations as it is sequentially read from the memory. In a specific embodiment the data constitutes amplitude values of a complex wave form of a type produced by a musical instrument at equally spaced points in time along an axis of the wave form. The memory is addressed at any one of a plurality of rates selected in accordance with a musical note to be played. Selection of a particular note results in a repetitive read out from the memory of groups of amplitude samples that collectively represent a wave shape. The group repetition rate represents the frequency of the desired musical tone and is determined by a control number that is unique for each output frequency. The control number periodically increases a number stored in the memory address register by the value of the control number so as to identify appropriate data addresses in the memory. Having selected a unique control number and therefore a unique output signal frequency, the latter is modulated by changing the control number during the repetitive generation of groups of amplitude samples. The same magnitude of small change in the control number for a plurality of frequencies to be generated will achieve an ensemble effect for octave decoupling. A relatively small magnitude repetitive variation of the control number, as groups of amplitude samples are repetitively read from the memory, will provide a tremulant effect. Other types of variation of the control number will achieve other types of frequency modulation.

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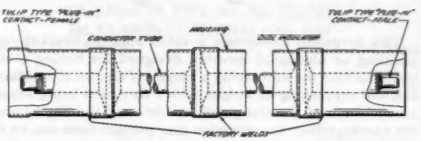
### 3,794,749
### METHOD FOR CONTROLLING CONTAMINATION IN GAS INSULATED TRANSMISSION SYSTEMS

**Lennard Wharton, Newtown Square, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.**

**Filed May 9, 1973, Ser. No. 358,631**

**Int. Cl. H01b** *9/04*

**U.S. Cl. 174—28** **15 Claims**




The deleterious affect of aluminum and other conductive particles within a compressed gas insulated transmission system is minimized by treating the system with an oxidixing agent.

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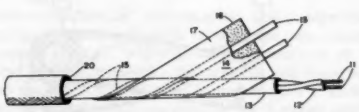
### 3,794,750
### SHIELDED CABLE

**Alfred Garshick, Raynham, Mass., assignor to Boston Insulated Wire & Cable Co., Boston, Mass.**

**Filed July 27, 1973, Ser. No. 383,185**

**Int. Cl. H01b** *11/06*

**U.S. Cl. 174—36** **6 Claims**



A shielded electric cable is described in which drain wires are incorporated into a shielding tape consisting of a metallic

foil bonded to a non-conductive base strip. In one form, the drain wires are held in contact with the foil surface by fixing them between the foil and the base strip. The shielding tape is helically or longitudinally wound around the insulated conductors to provide a continuous conductive shielding surface. At the terminal point, the exposure of one or more drain wires provides a convenient connection from the foil to a grounding terminal.

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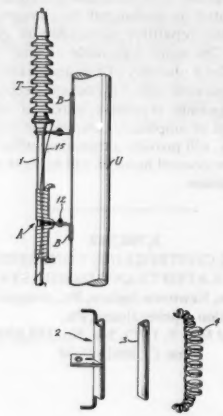
3,794,751

## CABLE SUPPORT BRACKET

Marion R. Farmer, and Michael Heinrich, both of Memphis, Tenn., assignors to Aluma-Form, Inc., Memphis, Tenn.

Filed Sept. 28, 1972, Ser. No. 292,987
Int. Cl. H02g 7/00; F16l 3/08
U.S. Cl. 174—40 R 15 Claims



This invention comprises a cable support bracket incorporating an elongated member designed for having a channeled surface for embracing a length of electrical conducting line and supporting its weight, with a tie means being wrapped around both of the elongated member and the line to secure the two together. An extension may project from one or both of the proximate ends of the elongated member to provide for fastening of said tie means, and at least one flange projects from the elongated member to provide for attachment of the bracket to a utility pole or other mounting device.

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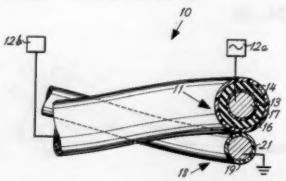
3,794,752

## HIGH VOLTAGE CABLE SYSTEM FREE FROM METALLIC SHIELDING

Steve Bunish, and Carl C. Landinger, both of New York, N.Y., assignors to The Anaconda Company, New York, N.Y.

Filed May 30, 1973, Ser. No. 365,345
Int. Cl. H01b 9/02
U.S. Cl. 174—115 5 Claims



An electric cable for service above 2000 volts does not include metallic members in its electrostatic shielding system but depends entirely on a semiconducting polymeric jacket for the electrostatic shield. A parallel neutral grounding conductor, held in lengthwise electrical contact with the jacket, drains any electrostatic current and provides ample path for the return current in the event of a fault.

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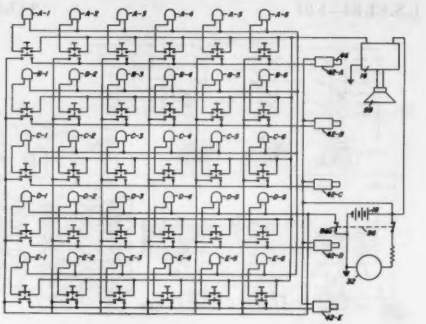
3,794,753

## SYNTHESIS OF SPEECH FROM A MAGNETIC TAPE MATRIX STORAGE OF PHONETIC SEGMENTS

John M. Hansen, Irondequoit, N.Y., assignor to David K. Weston and Kenneth C. Ferries, both of Rochester, N.Y., part interest to each

Filed Sept. 16, 1971, Ser. No. 181,083
Int. Cl. G10l 1/00
U.S. Cl. 179—1 SA 17 Claims



Phonetic sounds are recorded on several magnetic tapes, each tape storing a number of different phonetic sounds. A matrix of magnetic heads reads the tapes. Multiplexing of the signals from the heads is obtained and the phonetic sounds thereby combine to produce speech by a key board adapted to be worn by the user. When a key is depressed, the tape, on which is recorded phonetic sounds corresponding to the key, is driven. One of the heads reads the segment of the driven tape on which the selected sound is recorded. The outputs of the heads are combined in a play-back amplifier and fed to an external speaker which may be worn, as on the neck of the user. The user may be a person whose larynx has been removed.

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3,794,754

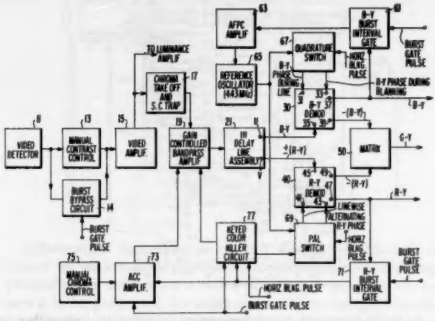
## PAL-TYPE COLOR SIGNAL PROCESSING APPARATUS

Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed May 8, 1972, Ser. No. 251,390
Claims priority, application Great Britain, May 7, 1971, 13857/71
Int. Cl. H04n 9/44
U.S. Cl. 178—5.4 P 7 Claims

Burst components of PAL-type encoded signal are retained with modulated subcarrier components as they are processed in 1H delay line assembly and delivered to respective demodulators. Reference oscillation phase to which R-Y demodulator responds is effectively reversed every other line, in response to PAL switch apparatus, in order to provide desired R-Y output in successive lines. Reference oscillation phase to which B-Y demodulator responds is alternated by quadrature switch apparatus between B-Y phase (applied throughout each line interval) and R-Y phase (applied during each inter-line blanking interval). A first gating circuit, coupled to the output of the B-Y demodulator, selects that portion of the B-Y demodulator output developed during the burst interval for passage to integrating and amplifying means in order to develop an AFPC voltage for phase control of the local reference oscillator. A second gating circuit, coupled to the output of the R-Y

demodulator, selects that portion of the R-Y demodulator output developed during the burst interval for passage to ACC and color killer circuitry. During color operation (enabled state of bandpass chrominance amplifier) the ACC circuiry develops a control current from the second gating circuit output that adjusts the chrominance amplifier gain in a direction appropriate to maintaining burst amplitude substantially constant at a level set by a manual chroma control. The color killer enables the chrominance amplifier for color operation only when the gated R-Y output indicates by its amplitude the presence of a burst in the received signal and by its polarity




the correct switching mode for the PAL switch. Unless such circumstances are present, the color killer disables the chrominance amplifier during each line interval; the killer is keyed, however, to enable the chrominance amplifier during each burst interval so that recovery from the disable state may be effected when appropriate. The color killer circuitry also passes a reset pulse to the PAL switch in the absence of a correct mode indication in the gated R-Y output. The color killer circuitry further serves to control the effectiveness of a subcarrier trap for the receiver's luminance channel, removing the trap during line intervals of monochrome operation.

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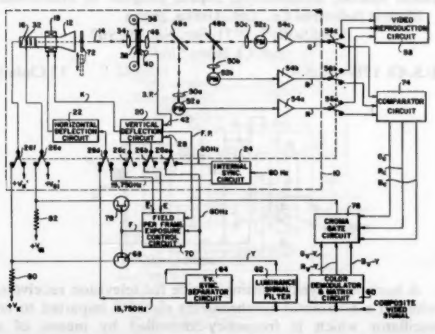
**3,794,755**

## BLANKING METHOD AND APPARATUS FOR VIDEO FILM RECORDER

**Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed July 3, 1972, Ser. No. 268,320**
**Int. Cl. H04n** *9/02*
**U.S. Cl. 178—5.4 CD** **10 Claims**




Method and apparatus for recording video information derived from composite video field signals including horizontal and vertical synchronizing signals, chrominance signals and luminance signals as color pictorial information in media frames on photosensitive media, such as color motion picture film. The film is continuously advanced through a scanning zone at a predetermined frame rate that is detected to produce a frame rate signal having a frequency equal to the frame rate of the continuously moving film. A flying spot scanner generates a beam of light modulated in intensity by the chrominance and luminance signals in said video information, and the beam is directed along a predetermined path to expose the film frames advanced through the film scanning zone. The modulated beam of radiation as deflected in a video field pattern recurring at a field rate equal to the frequency of the vertical synchronizing signal, and a vertical deflection circuit is responsive to the frame rate signal and the vertical synchronizing signal to superimpose the video fields on the film frames continuously advanced through the film scanning zone. An exposure control circuit including a counter is responsive to the vertical synchronizing signal and the frame rate signal to count the number of vertical synchronizing signals occurring in the period of the frame rate signal to produce an inhibit signal when the counted number exceeds a predetermined number. The inhibit signal inhibits the application of the luminance and chrominance signals to the flying spot scanner to prevent the exposure of the film frame to one or more video fields, the inhibit signal terminating at the instant that a vertical synchronizing signal follows, in time, a frame rate signal.

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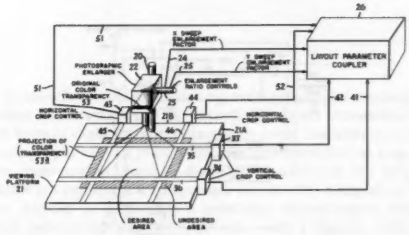
**3,794,756**

## APPARATUS FOR COUPLING PHOTOGRAPHIC PARAMETERS INTO A MECHANISM FOR THE PRODUCTION OF PHOTOGRAPHIC COLOR SEPARATIONS

**Alan S. Hahn, Bethel, and Harold O. W. Jordan, Stamford, both of Conn., assignors to Printing Developments, Inc., New York, N.Y.**

**Filed Sept. 14, 1971, Ser. No. 180,269**
**Int. Cl. G03b** *27/76;* **H04n** *1/38, 1/46*
**U.S. Cl. 178—5.4 CD** **7 Claims**



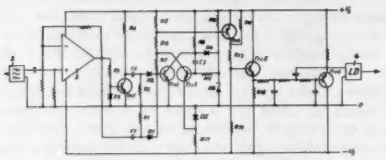

An electro-mechanical photographic color separation system having manually adjustable enlargement ratio controls and cropping controls, whereby color separations of an original can be formed having a different size and shape with respect to the original. Enlargement or reduction is accomplished by varying the scanning speed of the X-sweep and Y-sweep of a cathode ray beam scanner relative to an output film drum. Cropping is achieved by blanking the cathode ray beam scanner when the beam scanner attempts to scan outside a predetermined area defined by manually adjustable cropping controls.

3,794,757

## FM PULSE DISCRIMINATOR FOR DUPLEX FM SYSTEM

Frank-Torsten Knabe, Leonberg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 7, 1972, Ser. No. 260,553
Claims priority, application Germany, July 13, 1971, P 21 34 956.4
Int. Cl. H04l 27/14
U.S. Cl. 178—58 9 Claims



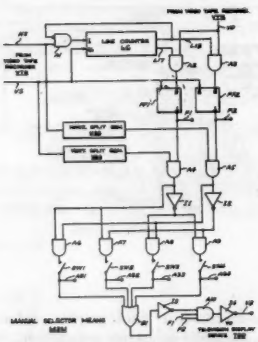
There is disclosed an FM discriminator for pulse signals transmitted by means of FM in the voice range where the carrier frequency and the modulating frequency are very close in frequency to each other. The discriminator includes a monostable multivibrator triggered by sine waves which are frequency modulated by a pulse signal. The modulating signal is recovered from the output pulses of the multivibrator by integration. The carrier frequency and modulating frequency are separated from each other by frequency doubling. This is accomplished by triggering the multivibrator by control signals derived from both half-cycles of each oscillation of the frequency modulated sine waves.

3,794,758

## SELECTABLE DISPLAY SYSTEM

Don J. Dudley, Brightwaters, N.Y., assignor to Data-Plex Systems, Inc., Greenwich, Conn.

Filed July 25, 1972, Ser. No. 275,081
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 10 Claims



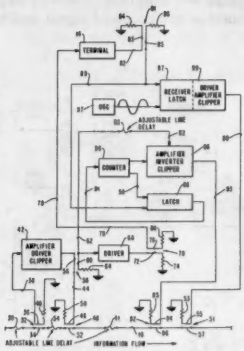
There is disclosed a selectable display system wherein fields and/or frames of television signals are dividable into quadrants and stored in a video tape recorder. As the recorder transmits the signals to a television display device, video signals in particular lines of the fields assist in the selection by a viewer through the agency of selector switches which quadrant is to be displayed.

3,794,759

## MULTI-TERMINAL COMMUNICATION APPARATUS CONTROLLER

Howard H. Nick, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,903
Int. Cl. H04l 11/15; H03r 5/13
U.S. Cl. 178—68 11 Claims



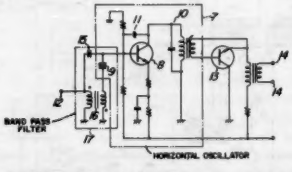
A multi-terminal communication apparatus controller is provided which allows information signals on a transmission medium to be replaced with new information signals at each terminal. Branch information signals are obtained from the main transmission medium by coupling without destroying or interrupting the propagation of the information signals on the transmission medium. These branch information signals are converted into terminal signals compatible with the terminal. New information signals are coupled from the terminal to a send branch line where they are converted into send information signals which are coupled onto the transmission medium. The branch information signals are phase inverted when the new information signals are provided. These phase inverted signals are applied to the transmission line so as to cancel the corresponding information signals on the transmission medium. The send information signals are coupled onto the transmission medium in the space left by the cancelled information signals.

3,794,760

## HORIZONTAL SYNCHRONIZING DEVICE FOR TELEVISION RECEIVERS

Juichi Moriki, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 7, 1971, Ser. No. 177,967
Int. Cl. H04n 5/04
U.S. Cl. 178—69.5 N 12 Claims



A horizontal synchronizing device for television receivers, wherein a horizontal synchronizing signal is imparted to an oscillator which is frequency-controlled by means of a mechanical resonator, and the oscillation frequency and phase of the oscillator are synchronized with those of said horizontal synchronizing signal by utilizing the drawing effect of said oscillator.

3,794,761

## PATTERN PROCESSING APPARATUS

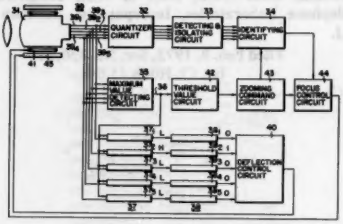
Hiroshi Genchi, Tokyo, and Tsuneo Yoneyama, Yokosuka, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 11, 1972, Ser. No. 270,732

Claims priority, application Japan, July 15, 1971, 46/52071; July 15, 1971, 46/52072

Int. Cl. H04n 5/30

U.S. Cl. 178—7.2 14 Claims




Information regarding a pattern being identified is obtained by means of a photoelectric connector comprising a photoelectric surface on which a photoinput image of the pattern is to be projected, focusing means for focusing photoelectrons emitted by the photoelectric surface in response to the photoinput image to form a photoelectron image on a focal plane, means to enlarge or reduce the photo-electron image, deflecting means for moving the position of the photoelectron image in the focal plane, an array of a plurality of electron beam detecting elements which are arranged in a plane near the focal plane, each electron beam detecting element generating a current proportional to the quantity of the electron beam impinging thereupon, and a plurality of parallel output conductors respectively connected to the electron beam detecting elements. The outputs on the output conductors are processed to identify the pattern.

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3,794,762

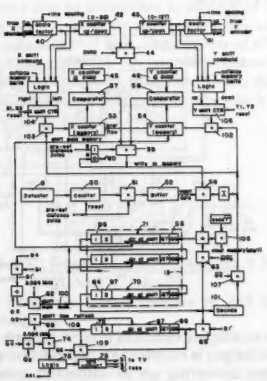
## VIDEO-DISPLAY-PROCESSOR

Yoram Zukerman; Moshe Ben-Porath, and Benjamin Sabbah, all of Haifa, Israel, assignors to Elscint Ltd., Haifa, Israel

Filed June 26, 1972, Ser. No. 266,128

Int. Cl. H04n 3/04, 5/76

U.S. Cl. 178—6.8 17 Claims



A video-display processor produces an on-line display of the distribution density of radiation stimuli emitted by a radiation field utilizing a probe for detecting the stimuli and a counter for accumulating the number of stimuli detected; and motorized means to cause the probe to traverse the field and sequentially scan a preselected number of elemental areas, each having a preselected size, for causing the probe counter to accumulate the number of stimuli that occurred during the scan of each elemental area. The number of stimuli accumulated during the scan of each elemental area, upon the completion of the scan thereof is transferred into a memory whose contents modulate the picture elements of a raster generated by a CRT of a TV display thus displaying the density of each elemental area immediately after scanning thereof is complete.

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3,794,763

## SPEECH-CONTROLLED SWITCHING ARRANGEMENT

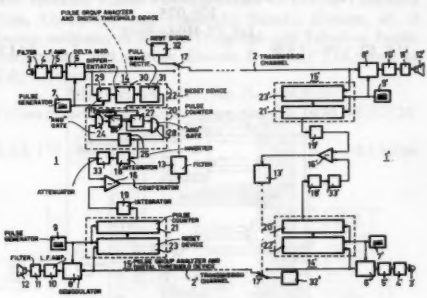
Henricus Petrus Johannes Boudewijns, and Johannes Anton Greefkes, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,151

Claims priority, application Netherlands, July 15, 1971, 7109806

Int. Cl. H04m 1/00

U.S. Cl. 179—1 VC 9 Claims



A speech-controlled switching arrangement for communication systems in which the speech signals are transmitted in the form of digital signals obtained by code modulation, comprising a plurality of pulse group analyzers coupled to respective transmission channels from which analyzers the output pulses are applied to a comparator circuit after integration for the purpose of generating a switching control signal, while each pulse group analyzer is provided with a digitally defined threshold characterizing a given fixed modulation index.

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3,794,764

## TELEPHONE LINE SEIZURE SWITCHES

Leonard M. Todd, 424 W. 119th St., New York, N.Y. 10027

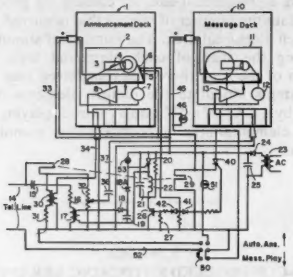
Continuation-in-part of Ser. No. 88,909, Nov. 12, 1970. This application July 5, 1972, Ser. No. 269,270

Int. Cl. H04m 11/00

U.S. Cl. 179—2 A 32 Claims

A telephone line seizure switch employs a dc blocking capacitor and a resistor or transformer or both in series across the telephone line to apply a fraction of ringing voltage to the control element of a transistor or thyristor which then

operates a line seizure circuit and operates associated apparatus from a power source. Time delay is shown and bistable




switches are taught including a thyristor circuit without a relay.

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3,794,765

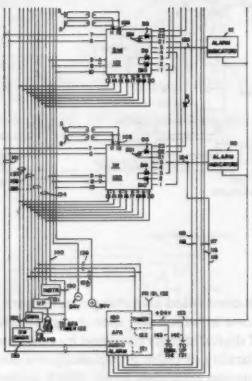
## ZONE SPEAKER RELAY SYSTEM

Harry C. Goodwater, San Francisco, Calif., assignor to Audio Alert Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 93,768, Nov. 30, 1970, Pat. No. 3,656,158. This application Feb. 24, 1972, Ser. No. 229,075

Int. Cl. H04q *3/00*

U.S. Cl. 179—1 SW 24 Claims



A zone speaker relay system is provided for selectively transmitting over loud speakers audio warning signals and audio evacuation instructions to personnel on selcted floors or in selected zones of a floor in a building in the event of an emergency. A separate zone speaker relay assembly is provided for each such floor and zone. When, for example, there is one speaker zone per floor, the zone speaker relay assemblies effect automatic switching of the loud speakers associated with the floor on which the emergency occurs, called the involved floor, and the floors immediately above and below the involved floor. The switching assemblies ensure that the speakers associated therewith receive a proper alarm signal and taped message when an alarm station is activated on the involved floor for directing personnel on those floors away from the location of the emergency. Personnel on the involved floor and the floor immediately below the involved floor are warned and directed to evacuate via lower floors. Personnel on the floor immediately above the involved floor are warned and directed to evacuate via upper floors. Provision is also made for permitting activation of alarm stations on other floors and in that event for the giving of proper evacuation instruction to personnel on those floors to prevent directing these personnel into previously invoked areas.

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3,794,766

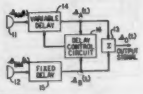
## DELAY EQUALIZING CIRCUIT FOR AN AUDIO SYSTEM USING MULTIPLE MICROPHONES

Donald Clyde Cox, New Shrewsbury, and Douglas Otto John Reudink, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Feb. 8, 1973, Ser. No. 330,701

Int. Cl. H04b *15/00*

U.S. Cl. 179—1 P 3 Claims




For an audio system such as a telephone station set of the so-called "hands free" variety, the well-known echo effect known as the "rain barrel" effect is reduced and the average signal to echo power ratio is improved by employing a multiplicity of microphones and equalizing the total delays in the signal paths including the microphones at which the strongest audio signals are received. The needed variation of delay is determined by time domain correlation techniques in which one branch circuit includes a relatively fast local peak detector for a product signal and another branch circuit includes a relatively slow absolute peak detector for such a product signal. Other microphones may be similarly paired for delay equalization. The signals are then summed to produce the output signal.

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3,794,767

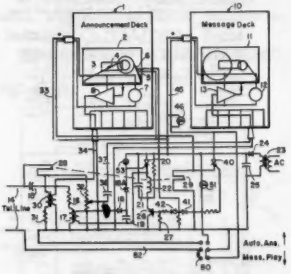
## CONTROL CIRCUIT FOR TELEPHONE ANSWERING SET WITH A RECORDER USING A CONVENTIONAL RECORD-PLAY SWITCH

Leonard M. Todd, 424 W. 119th St., New York, N.Y. 10027

Continuation-in-part of Ser. No. 88,909, Nov. 12, 1970. This application May 3, 1972, Ser. No. 250,068

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R 24 Claims



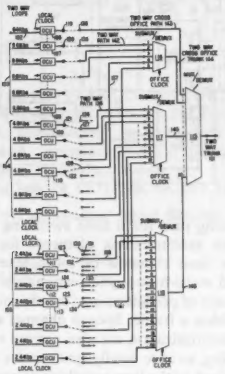

The record-play switch of a message tape deck (preferably of usual design) is coupled to a two position switch to enable a telephone answering set in automatic answer and message playback conditions. This switch may be a single pole, single throw switch. Fast forward, rewind and play controls are used, as may be the record control. A circuit enables the automatic recording of telephone conversations.

3,794,768

## CROSS-OFFICE CONNECTING SCHEME FOR INTERCONNECTING MULTIPLEXERS AND CENTRAL OFFICE TERMINALS

Adam Carroll Carney, Middletown, N.J.; Michael Peter Cichetti, Jr., Staten Island, N.Y.; Joseph George Kneuer, Fair Haven, N.J., and Donald W. Rice, Monmouth, N.J., assignors to Bell Telephone Laboratories Incorporated, Berkeley Heights, N.J.

Filed May 25, 1972, Ser. No. 256,827
Int. Cl. H04j 3/12
U.S. Cl. 179—15 BA 20 Claims



Interchange of data between two way loops and a data trunk is provided by way of channel units, submultiplexer/demultiplexers and a common multiplexer/demultiplexer. Submultiplexers have five, 10 or 20 ports, creating time frames with corresponding numbers of time slots, all of equal duration. The channel units, which terminate 9.6, 4.8 or 2.4 Kbs data subscribers, assemble the incoming data into bytes, repeat each byte five, 10 or 20 times, respectively, and align each successive one of the repeated bytes with successive time slots. Any port of a five port submultiplexer can be connected to any 9.6, 4.8 or 2.4 channel unit. Similarly, any port of a ten port submultiplexer can be connected to any 4.8 or 2.4 channel unit and any port of a twenty port submultiplexer can be connected to any 2.4 channel unit. The outputs of all submultiplexers are interleaved by the common multiplexer and applied to the trunk. Incoming data from the trunk is distributed to the several submultiplexers/demultiplexers which, in turn, distribute the data to the channel units.

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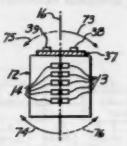
3,794,769

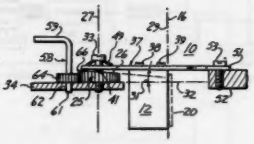
## AZIMUTH ADJUSTMENT PARTICULARLY FOR MAGNETIC HEADS

Joseph J. Neff, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 19, 1972, Ser. No. 218,978
Int. Cl. G11b 5/56
U.S. Cl. 360—109 20 Claims

An azimuth adjustment for magnetic recording heads and other devices has a rotatable member with an inclined surface relative to an axis of rotation. A mount for the recording heads or other devices has a pair of spaced cam followers which are yieldably pressed against the inclined surface of the rotatable





member. To effect azimuth adjustments, the rotatable member is rotated whereby the mount is selectively twisted.

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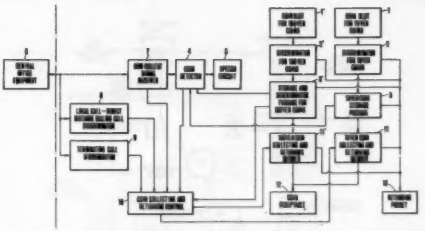
3,794,770

## COIN TELEPHONE SETS

Yukio Tabiichi; Yuichi Yamazaki, both of Tokyo; Yoshiharu Sato, Yokohama, and Tsunehiko Suzuki, Isehara, all of Japan, assignors to Nippon Telegraph and Telephon Public Corporation and Anritsy Electric Company Ltd., both of Tokyo, Japan

Filed Oct. 18, 1971, Ser. No. 189,919
Claims priority, application Japan, Oct. 26, 1970, 45-93520
Int. Cl. H04m 17/02
U.S. Cl. 179—6.3 R 9 Claims



This coin telephone set uses polarity reversal of both a speech current from the central office equipment and a source of rectified alternating current to enable a local call, direct distance dialed call, operator-handled toll call, a delay call or an emergency call by simultaneous use of coins of low value and coins of high value.

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3,794,771

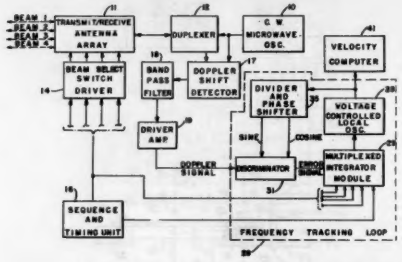
## TIME-SHARED FREQUENCY TRACKING LOOP

Ernest F. Darboven, Katonah, and Leon R. Solomon, Ossining, both of N.Y., assignors to The Singer Company, New York, N.Y.

Division of Ser. No. 159,861, July 6, 1971, Pat. No. 3,710,386.
This application Sept. 7, 1972, Ser. No. 287,111
Int. Cl. H04j 3/00
U.S. Cl. 179—15 BL 5 Claims

In a frequency tracking loop, a single voltage-controlled local oscillator produces a sequence of output signals representing the respective peak power frequencies in a

recycling sequence of input signals. The oscillator output is compared to the input signals to produce a DC error signal passed to a single operational amplifier. Integrating capacitors are alternately coupled between the amplifier's input and output in a synchronized sequence corresponding to the input signals. The amplifier output, which controls the oscillator frequency, is thus repeatedly switched from one value to the next representing the last corresponding voltage in the previous cycle.

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3,794,772

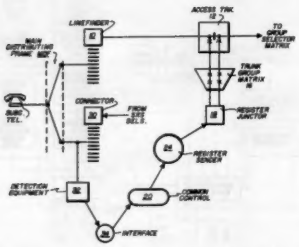
## ARRANGEMENT FOR INTEGRATING SWITCHING SYSTEMS OF DIFFERENT TYPES

**Donald P. Kroes, Lisle, and Matthew S. Lassen, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Oct. 2, 1972, Ser. No. 293,987**

**Int. Cl. H04q** *3/48*

**U.S. Cl. 179—16 EC** **6 Claims**




An arrangement for integrating a switching system of the direct controlled type with a switching system of the marker controlled type having common control equipment wherein the existing linefinder groups of the direct control system are equipped with access trunks to connect concentrated traffic from lines to the central switching matrix of the marker controlled system, in the same manner as the line concentrating matrices and originating junctors function for the lines in a marker controlled system. One or several ranks of selectors and connectors also distribute traffic from central switching matrix to the lines in the same manner as the line concentrating matrices and terminating junctors function for the lines in a marker controlled system. In order that the common control features can be applied to the lines of the direct control system, the marker controlled system further is arranged to obtain the line number identity by means of detection equipment associated with the linefinders.

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3,794,773

## SYNCHRONIZING UNIT

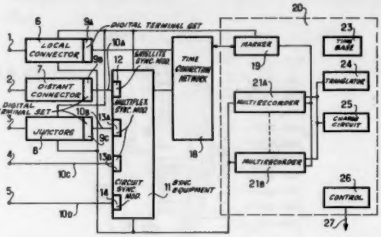
**Jean-Baptiste Jacob, Quay-Perrous-Guirec; Roger Renoulin, and Jean Guezou, both of Lannion, all of France, assignors to Societe Lannionnaise D'Electronique, Lannion, France and Compagnie Industrielle Des Telecommunications, Paris, France**

**Filed June 30, 1972, Ser. No. 268,090**

**Claims priority, application France, June 30, 1971, 7124027**

**Int. Cl. H04j** *3/06*

**U.S. Cl. 179—15 BS** **15 Claims**




A synchronizing unit for a time switching apparatus employs respective synchronizing elements for synchronizing communication time channels of multiplexed data signals. Both frame and multi-frame sync recognition detection is effected on the basis of predetermined synchronizing time channels allotted within a frame. Speech channel and data signaling channel synchronization are also carried out on the basis of channel coding, so as to totally synchronize the data signals with the local clock of the time switching apparatus.

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3,794,774

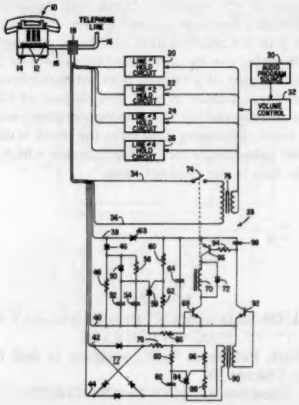
## TELEPHONE AUDIO PROGRAM SYSTEM

**Richard C. Kemmerly; Gary M. Kaner, and Gary C. Merritt, all of Dallas, Tex., assignors to Courtesy Communications Corporation, Dallas, Tex.**

**Filed Jan. 19, 1973, Ser. No. 325,082**

**Int. Cl. H04m** *1/21*

**U.S. Cl. 179—81 R** **19 Claims**




The specification discloses a system for selectively applying an audio program to incoming telephone lines placed in hold conditions. The system is connected to the exterior cord of a conventional telephone set having a hold switch and a plurali-

ty of line switches operable between two positions to open and close the telephone lines. The line switches also have a plurality of illumination modes representative of different operational modes. The system includes a first electronic switch operable to be energized in response to the illumination mode of one of the lines which is representative of a line in use or which is representative of a line placed in the hold condition. A second electronic switch is operable to be energized in response to the placing of the line switch in the up position indicative that the incoming telephone line is open. A relay is operable only when the first and second electronic switches are energized in order to apply an audio program to the incoming telephone line associated with the line switch. The person making the incoming telephone call is thus provided with an audio program such as music or the like during the time the incoming line is placed on hold.

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**3,794,775**

## DIGITAL IMPULSE CORRECTOR FOR TELECOMMUNICATION CIRCUITRY

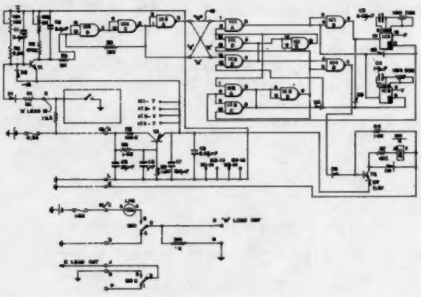
**Percy W. Hicks, and Michael R. Gale, both of Winnipeg, Manitoba, Canada, assignors to A.E.I. Telecommunications (Canada) Limited, Manitoba, Canada**

**Filed July 29, 1971, Ser. No. 167,111**

**Claims priority, application Great Britain, Aug. 3, 1970, 37316/70**

**Int. Cl. H04q** *1/36*

**U.S. Cl. 179—16 EA** **5 Claims**



An add-on circuit automatically adjusts or maintains the make and break ratios of telecommunication dial pulsing within limits, thus helping to eliminate many network and trunk line signalling problems.

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**3,794,776**

## KEY TELEPHONE SYSTEM TRANSFER ADAPTER CIRCUIT

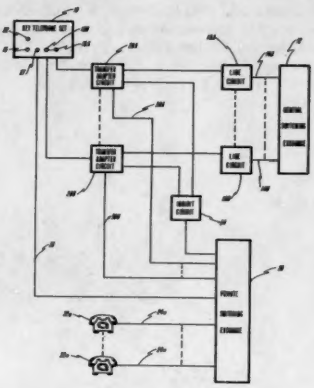
**William R. Goodman, and Kal W. Howard, both of Charlottesville, Va., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.**

**Filed July 10, 1972, Ser. No. 270,412**

**Int. Cl. H04m** *3/00*

**U.S. Cl. 179—99** **13 Claims**

Transfer adapter circuits are combined with a key telephone system for extending telephone lines to a private in-



tercom system without the need for individual pickup button positions on the key telephone set.

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**3,794,777**

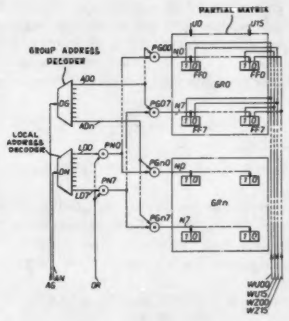
## DISTRIBUTOR FOR A CENTRALLY CONTROLLED TELEPHONE SWITCHING SYSTEM

**Claude Bouchet, La Varenne-St-Hilaire, and Vladimir Francois Jean Tomasovitch, Meudon-la-Forest, both of France, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed June 29, 1972, Ser. No. 267,433**

**Int. Cl. H04q** *3/50*

**U.S. Cl. 179—18 GF** **3 Claims**



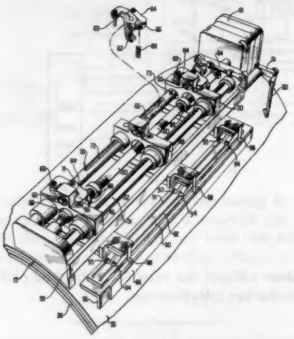
A distributor is disclosed for a centrally controlled telephone exchange enabling the control of bistables distributed in groups. The distributor receives from the central unit for a group of bistables to be controlled a control data item indicating the bistables to be set in position 1 and 0, and an inhibition data item indicating the bistables whose position must remain unchanged and serving to mask the elements of the control data corresponding to these bistables. The central unit function is thus limited to the elaboration and to the transmission only of the control data elements intended to certain components of an addressed group.

3,794,778

## ANNOUNCEMENT APPARATUS HAVING INDEPENDENTLY VARIABLE MESSAGE SEGMENTS

Leary W. Smith, and Ellis H. Bryant, Jr., both of Atlanta, Ga., assignors to The Audichron Company, Atlanta, Ga.

Division of Ser. No. 10,386, Feb. 11, 1970, Pat. No. 3,668,326.
This application Dec. 8, 1971, Ser. No. 206,067
Int. Cl. G11b 21/08; H04m 1/64
U.S. Cl. 179—100.1 C 10 Claims



An announcing system for providing a family of recorded announcements through telephone central office equipment to one or more telephone subscriber lines. The weather segment of the announcement is determined by different three digit weather codes and by changing the positions of a plurality of weather announcing heads along a weather announcing drum in response to a plurality of resistances corresponding to the three digit weather codes. The weather announcing apparatus includes a plurality of message reading heads which are independently positionable along message segment locations on a recording cylinder, and the message reading heads can be simultaneously moved into engagement with the recording cylinder for sequential delivery of selected message segments.

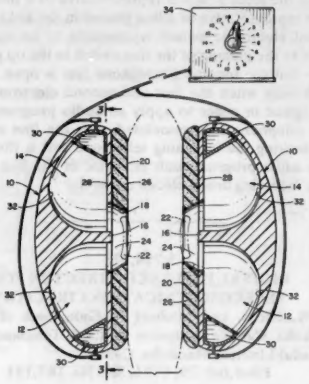
3,794,779

## HEADPHONES FOR REPRODUCING FOUR-CHANNEL SOUND

Charles E. Greuzerd, Garden Grove, and Louis Lawrence Henkin, Huntington Park, both of Calif., assignors to Victor B. Morgan, Los Alamitos; Thomas P. Mahoney and George E. Schick, both of Santa Monica, all of, Calif., part interest to each

Filed Aug. 23, 1971, Ser. No. 173,809
Int. Cl. H04m 1/05
U.S. Cl. 179—156 R 15 Claims

Each headphone casing encloses forwardly and rearwardly extending, segregated, acoustic mixing chambers segregated by a generally vertical partition and opening inwardly through a common, generally central opening to an ear of the person wearing the headphones. The headphone segregated mixing chambers preferably have specifically contoured walls with a sound emitting device in each mixing chamber directed at least partially against said walls for a proper sound mixing in each mixing chamber and the headphones central openings are of appropriate various sizes and depth for at least fully receiving the persons ear with acoustic integrating chambers of various sizes formed by the central openings adjacent the ears and simultaneously communicating with each of the segregated mixing chambers. Thus, with one channel of four-channel sound directed into each of the mixing chambers of a set of the earphones, the full effect of four-channel sound is



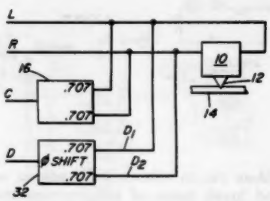
received, and by similar connection of stereophonic sound, many of the four-channel sound effects are reproduced from the stereophonic sound.

3,794,780

## QUADRAPHONIC RECORDING SYSTEM

Benjamin B. Bauer, Stamford, and Daniel W. Gravereaux, Wilton, both of Conn., assignors to Columbia Broadcasting Systems, Inc., New York, N.Y.

Division of Ser. No. 44,196, June 8, 1970, Pat. No. 3,708,631.
This application July 13, 1972, Ser. No. 271,470
Int. Cl. G11b 3/74
U.S. Cl. 179—100.4 ST 2 Claims



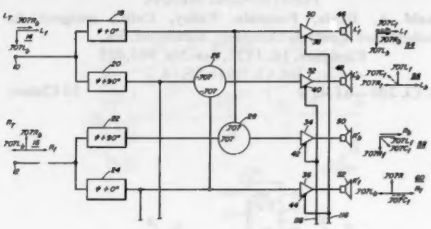

Apparatus for recording four separate channels of sound information on the two tracks of a stereophonic disc record for subsequent reproduction on four loudspeakers to give the listener the illusion of sound coming from four separate sources. Two of the four signals are applied to respective ones of the two tracks, as in stereophonic recording, with the third and fourth channels superimposed thereon by applying equal in-phase portions of the third signal to both of the tracks and by applying equal portions of the fourth signal to both of the tracks with a differential phase angle between the two portions which remains substantially constant throughout the audio frequency range of interest. The fourth signal applied in this way causes the stylus of a stereophonic cutter to describe an ellipse having major vertical and horizontal axes disposed normal and parallel, respectively, to the surface of the record.

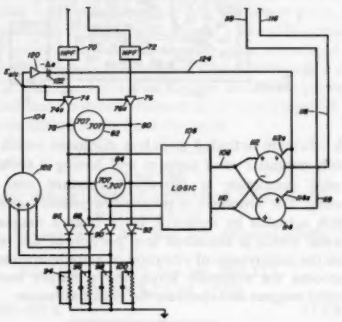
3,794,781

## FOUR CHANNEL DECODER WITH IMPROVED GAIN CONTROL

Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Filed Sept. 1, 1971, Ser. No. 177,002
Int. Cl. H04r 5/00
U.S. Cl. 179—1 GQ 5 Claims





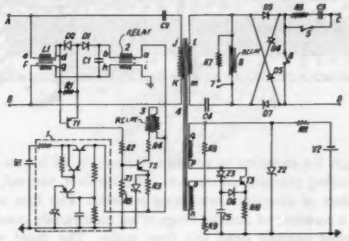
Apparatus including a matrix for decoding four separate channels of information transduced from a medium having only two separate tracks and presenting it on four loudspeakers to give the listener the illusion of sound coming from a corresponding number of separate sources. Side-effect or transferred signals between channels tend to diminish the realism of four-channel reproduction. The realism is enhanced by a decoding system which accepts the two outputs from the medium, which, for example, may be a stereophonic disc record, separates them into four independent channels each carrying predominantly the information contained in one of the four original recorded sound signals, and, utilizing logic circuit techniques derives control signals for controlling the gains of amplifiers associated with the four loudspeakers. The control circuitry improves the separation of the four independent channels, particularly the generally "front" from the generally "back" signals. To prevent the transferred back signals corresponding to a "center front" signal from being heard instantaneously in the back channels (and vice versa) a selective gating voltage is applied to the control circuitry which reduces the quiescent gain of the amplifiers during silence or very low level passages by a pre-selected amount, whereby upon sudden application of a signal to the decoder the gain of the amplifier carrying the desired signal is raised rapidly to a normal operating level only in those channels intended to carry the signal and thus the undesired side-effect signals are essentially eliminated.

3,794,782

## PABX TRANSMISSION AND IMPULSING CIRCUIT

John Sidney Velik, Cremorne, Australia, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,241
Claims priority, application Australia, Jan. 20, 1971, PA 3759
Int. Cl. H04b 3/36
U.S. Cl. 179—170 R 5 Claims



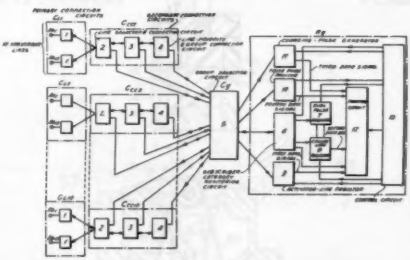
A circuit arrangement is provided for two-way speech transmission and one-way impulse transmission in telecommunication exchanges. Transmission is across a transformer having first and second windings series connected to, but D.C. isolated from, first and second two-way speech paths respectively. Amplifier means is coupled through additional windings of the transformer to compensate for the attenuation of signals between the two speech paths due to natural transformer losses. A source of regulated D.C. power provides energy to the first two-way speech path and to an impulse repeater circuit coupled thereto. The repeater circuit provides substantially identical impulses to the second two-way speech path.

3,794,783

## TELEPHONE-SYSTEM MONITORING AND RECORDAL APPARATUS USING ORDINARY PAPER

Stan G. Radu, Bucharest, Rumania, assignor to Directia De Telecomunicatii a Municipiu Bucuresti, Bucharest, Rumania

Filed Nov. 5, 1971, Ser. No. 196,042
Int. Cl. H04m 3/22
U.S. Cl. 179—175.2 C 6 Claims



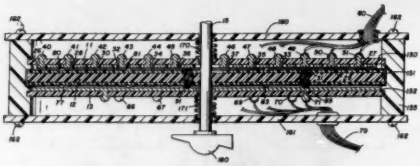
Telephone service equipment adapted to genuine conception, construction and way of working, since it can record graphically on a common paper sheet for the monitored telephone line the time of the connection, call number of the called subscriber in form of ciphers from 1 to 0 calling number and category of the line requiring the connection and, tariff rate charging impulses with the possibility of recording in a different color any false impulses or special observations.

3,794,784

## ROTARY WAFER SWITCH HAVING ROTOR MOUNTED, SPIRAL ARRANGED AXIAL BRIDGING CONTACTS

Richard J. Snider, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 7, 1973, Ser. No. 357,831
Int. Cl. H01h 19/58
U.S. Cl. 200—11 A 10 Claims



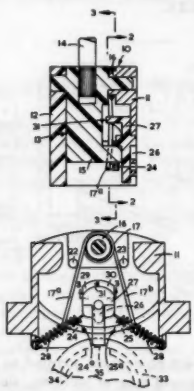
A switch for stepping in rotation a plurality of inputs to a corresponding plurality of outputs includes first, second, and third wafers of electrical insulating material. The first wafer presents a number of coaxial rings of an electrically conducting material printed onto the first wafer. The third wafer presents a plurality of electrical conductors radially extending from a central axis point. Intermediate the first and third wafers is a second wafer which carries a plurality of electrically conducting contacting members each contacting a respective one of the plurality of rings of the first wafer and one of the plurality of radially extending electrical conductors on the third wafer. As the second wafer is rotated, each of the contacting members of the second wafer remains in electrical contact with its respective ring, but is switched to a different radially extending member.

3,794,785

## SWITCH ACTUATING MECHANISM FOR TURN INDICATOR TYPE SWITCHES

Neil Tomlinson, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 5, 1972, Ser. No. 259,950
Claims priority, application Great Britain, Aug. 6, 1971, 37,033/71
Int. Cl. H01h 3/16
U.S. Cl. 200—61.27 3 Claims



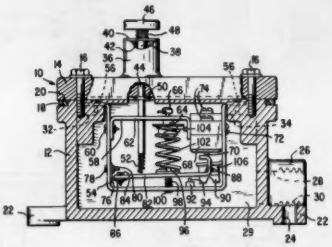
A switch actuating mechanism for a self-cancelling direction indicator switch, in which mechanism a switch control lever is biased by a torsion spring from its two indicating positions to a central non-indicating position. Arms of the torsion spring slide along ramp surface and into detents to retain the control lever in a selected operating position. A release member having a portion which is engageable by a striker on a vehicle steering column is pivotable thereby and cam surfaces on the release member can engage and release respective arms from the detents so that the torsion spring can urge the lever into its central position.

3,794,786

## VIBRATION ACTUATED SWITCH WITH MAGNETIC HOLDING MEANS AND ARMATURE RESET POSITIONING MEANS

Donald A. Doyle, Fountain Valley, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 10, 1972, Ser. No. 305,403
Int. Cl. H01h 35/14
U.S. Cl. 200—61.45 R 14 Claims



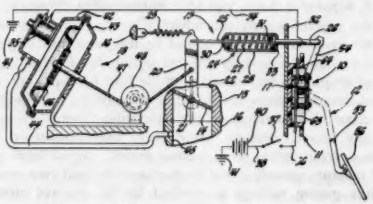
A vibration actuated switch is disclosed which includes a switch mounted on a support and having a switch actuator located proximate a movable armature and controlled thereby. The armature is retained in position away from the switch actuator by magnetic force from a magnet mounted thereon which is attracted to a portion of the support, and upon the occurrence of vibration of a predetermined extent to overcome the magnetic force, the armature moves toward another magnet and operates the switch actuator.

3,794,787

## SUPPORT ASSEMBLY FOR A THROTTLE PEDAL AND SWITCH ACTUATABLE THEREBY

Gale F. Berninger, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 11, 1972, Ser. No. 313,786
Int. Cl. H01h 3/14
U.S. Cl. 200—61.89 3 Claims



A pedal lever and switch support assembly adapted to be mounted on the firewall of a vehicle wherein the pivot section of the pedal lever is pivotably and slidably supported by a support bracket that carries a switch actuatable by the pivot section when slidably moved in the support bracket.

3,794,788

## ELECTRICAL SWITCH

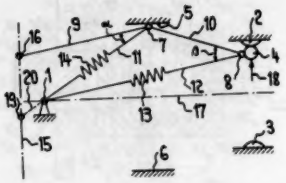
Hans Ulrich Leibundgut, Gasel, Switzerland, assignor to Saia AG, Murten Fribourg Canton, Switzerland

Filed Oct. 17, 1972, Ser. No. 298,232

Claims priority, application Switzerland, Nov. 8, 1971, 16188/71

Int. Cl. H01h *13/36*

U.S. Cl. 200—67 D 5 Claims



An electrical switch, preferably a small or miniature switch, with a double toggle, with at least one stationary pivot, two fixed contacts, one movable contact and a movable actuating member, wherein a plurality of single toggles are nested one inside the other, so that each member is simultaneously a component of at least two individual toggles, means for providing that the condition "contact pressure zero" is not possible as a permanent condition at the fixed contacts.

3,794,789

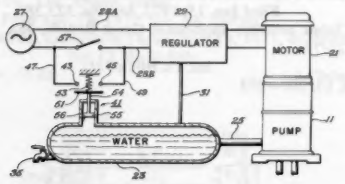
## PRESSURE SENSITIVE CONTROL FOR PUMP REGULATOR

Johnnie J. Bynum, Star Rt., Box 98, Mineral Wells, Tex. 76067

Filed Nov. 2, 1972, Ser. No. 303,117

Int. Cl. H01h *35/34, 35/38*

U.S. Cl. 200—83 Z 11 Claims




The specification discloses a water pumping system including an electric motor driven pump coupled to an underground water reservoir by way of conduits and to an uphold storage tank for storing water and having a pressure regulator for completing an electrical circuit to the pump motor from an electrical energy source when the water pressure falls below a preset low pressure level and for disconnecting the electrical circuit when the water pressure rises above a preset upper pressure level. Coupled between the source and the pump motor is a pressure switch sensitive to the water pressure of the system for disconnecting the electrical circuit in the event that the water pressure falls to a given lower pressure level below the preset low pressure level of the pressure regulator.

3,794,790

## ELECTRICAL SWITCHES

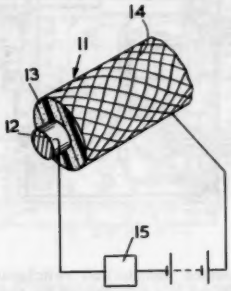
Kenneth Leyland, Newcastle-under-Lyme, England, assignor to Rists, Wires and Cables Limited, Newcastle-under-Lyme, England

Filed Jan. 24, 1973, Ser. No. 326,339

Claims priority, application Great Britain, Apr. 2, 1972, 5,276/72

Int. Cl. H01h *13/16*

U.S. Cl. 200—86 R 2 Claims



An electrical switch including a first flexible elongated conductor and a second flexible elongated conductor coaxial with the first conductor. An insulating element which is both resilient and deformable spaces the first conductor from the second conductor along the whole length of the first conductor, and the insulating element is loaded with conductive particles. The nature of the insulating element containing the conductive particles is such that compression of the element in a direction to decrease the spacing between the first and second conductors establishes a conductive path within the element between the first and second conductors.

3,794,791

## PERSONAL DEFENCE DEVICE

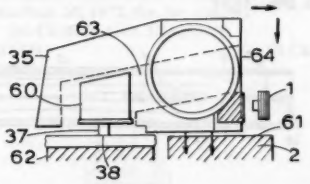
Peter Thomson, 45A, Blossom St., York, England

Filed June 29, 1972, Ser. No. 267,362

Claims priority, application Great Britain, June 29, 1971, 30,426/71

Int. Cl. H01h *9/06*

U.S. Cl. 200—61.93 8 Claims



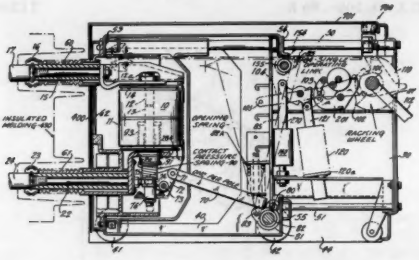
The invention relates to a switching device adapted for use in instruments of personal defence to actuate two or more electrically or mechanically operated components of which at least one is electrically operated and at least one is mechanically operated. The device may be adapted for use in conjunction with the push button system of a torch, the push button system being operable both partially so as to actuate only the circuit for a bulb, and fully so as to actuate also a noise alarm device and mechanically actuate means capable of emitting a spray jet.

3,794,792

## SWITCHGEAR WITH SINGLE DRIVE TO BOTH CHARGE CLOSING SPRING AND RACK CONTACT CARRIER

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 21, 1972, Ser. No. 282,597
Int. Cl. H01h 3/30
U.S. Cl. 200—153 SC 7 Claims



Truck mounted miniaturized switchgear adapted to be removably placed in a switchboard for connection to busses located in the switchboard comprising a truck frame and circuit interrupter elements mounted on a second frame telescopingly movable with respect to the truck frame. The circuit interrupter elements are opened by a spring on the occurrence of predetermined circuit condition and the removal of a retaining latch structure. The spring is recharged after opening and may be automatically recharged while the contacts are closed in preparation for the next opening. A rotatable lever or crank is used to charge the spring and motor means may be provided for operating said rotatable lever. The contacts are trip free in that the spring may be moved toward discharge position while it is in the process of being charged. The same motor with other connections is utilized to drive the racking member which moves the telescoping frame carrying the circuit interrupter elements with respect to the truck frame.

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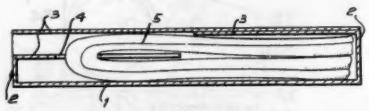
3,794,793

## PACKAGE FOR FLEXIBLE ARTICLES

Manuel Valls Rius, Avenida Balmes, 16, Igualada, Barcelona, Spain

Filed Aug. 4, 1971, Ser. No. 168,949
Claims priority, application Spain, Jan. 22, 1971, 165814
Int. Cl. B65d 5/50
U.S. Cl. 206—45.19 10 Claims



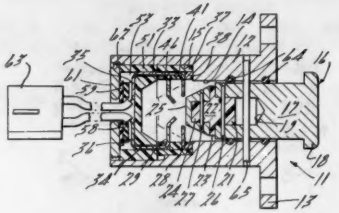
A packing for a garment has a rectangular central panel which may carry informative printing, four side-pieces foldable to form the sides of a box-shape and four flaps extending one from each side-piece foldable to lie parallel to the central panel to form the top of a box-shape. One side-piece is narrower than the others and the flap associated with it has an elongate aperture through which a folded garment is hung. This side piece is folded first so that the garment lies inside the box for transportation and storage. For display, the flap with the garment may be hung outside the box, or the other flaps may be opened to expose the garment.

3,794,794

## IMPACT RESPONSIVE SWITCH WITH FRANGIBLE ELEMENT HOLDING CONTACT PLUNGER IN UNACTIVATED POSITION

Ronald W. Provancher, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 10, 1972, Ser. No. 305,620
Int. Cl. H01h 35/14, 9/00
U.S. Cl. 200—61.53 6 Claims



The impact switch is responsive to the movement of a vehicle member subjected to an impact force as the result of a vehicle collision with a fixed object or another vehicle. The switch comprises a plunger device movable longitudinally within the cylindrical housing containing axially spaced electrically conductive contact rings. The plunger device carries an electrically conductive contact means engagable with the contact rings in sequence as the plunger device is driven into the housing. A shear pin normally holds the plunger device against displacement such as could be caused by vibration or longitudinally exerted inertial forces. Upon a predetermined impact force being applied to the plunger device, the shear pin is adapted to shear and permit displacement of the plunger means. Engagement of the plunger contact means with the contact rings closes an electrical circuit through the switch. The closed electrical circuit may be used to trigger an airbag system or other vehicle passenger restraint device.

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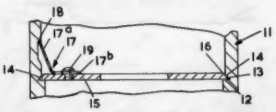
3,794,795

## IGNITION DISTRIBUTOR HOUSING AND RESILIENTLY ATTACHED DISTRIBUTOR BASE PLATE

Keith Tromans, Warley, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Jan. 15, 1973, Ser. No. 323,383
Claims priority, application Great Britain, Jan. 15, 1972, 2,026/72
Int. Cl. H01h 9/02
U.S. Cl. 200—293 8 Claims



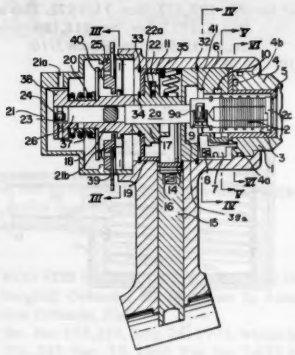
An ignition distributor for use in an internal combustion engine spark ignition system including a hollow casing formed internally with a support surface and a groove. The groove extends radially into the wall of the casing from the support surface. The distributor further includes a contact breaker assembly mounting plate which is supported on the support surface, and which includes a peripheral region capable of being engaged in a region of the groove in the casing wall. A spring member is provided which urges the mounting plate both downwardly onto the support surface and transversely so that the region of the plate engages in the corresponding region of the groove.

3,794,796

## ALCOHOL SECURITY INTERLOCK SWITCH DEVICE

Arthur Stanley Dwan, 23 Grensby Rd., Croydon, England

Filed Apr. 10, 1972, Ser. No. 242,499
Claims priority, application Great Britain, Apr. 26, 1971, 11372/71; May 7, 1971, 13733/71
Int. Cl. H01h 27/00
U.S. Cl. 200—44 10 Claims



This invention is an alcohol security interlock switch for a motor vehicle comprising a locking mechanism disposed in a housing and operable by a key which, if inserted carefully and within a prescribed period by a driver with a steady hand, will start the motor of the motor driven vehicle, but, if the action is attempted by a driver under the influence of drink or drugs immobilisation of the motor will inevitably follow.

The locking mechanism includes a lock barrel assembly which is rotatable by the key and movable axially by relatively light pressure to operate an electro/mechanical immobilising mechanism.

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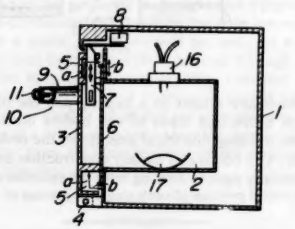
3,794,797

## LEAKAGE PREVENTING MICROWAVE OVEN

Michiyo Nakano, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 14, 1972, Ser. No. 244,057
Claims priority, application Japan, Apr. 19, 1971, 46-25495
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 6 Claims



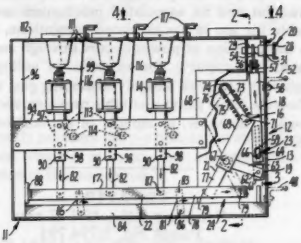
A microwave oven comprising a door lock key operatively associated with a door handle of a door hermetically sealed to block off the escape of microwave energy, and a door lock switch operated by said door lock key, whereby instantaneous leakage of microwave energy is prevented when said door is opened in the course of heating.

3,794,798

## SUBMERSIBLE SWITCH AND DOUBLE TOGGLE, POWER TRANSMISSION MEMBER OPERATING MECHANISM THEREFORE

Frank C. Trayer, 25690 LaLanne Ct., Los Altos Hills, Calif. 94022

Continuation of Ser. No. 214,330, Dec. 30, 1971, abandoned.
This application Apr. 27, 1973, Ser. No. 354,942
Int. Cl. H01h 3/46, 3/48
U.S. Cl. 200—153 G 14 Claims



A medium-voltage submersible switch having a pair of over-center toggle mechanisms in series in the power train operating the switch elements, the first of the toggle mechanisms being operable from outside the tank housing the switch. Lost Motion connections are placed between the first toggle mechanism and the operator, and between the first and second toggle mechanisms. Three parallel switches are shown, actuated by a single driving bar, which is equipped with a stop to limit its motion just beyond the over-center point of the second toggle mechanism in one direction, and a latch mechanism is shown for remote triggering of the switch after the mechanism has been cocked. A motor operator is shown pivotally attachable to the outside of the enclosure and engageable with the operating member of the first toggle. The motor operator may be disengaged from the operating member for manual switch operation by being pivoted about the pivoted attachment. An alternate form is shown having a single switch element and a fuse in series with the switch element, for testing circuits suspected of high fault currents.

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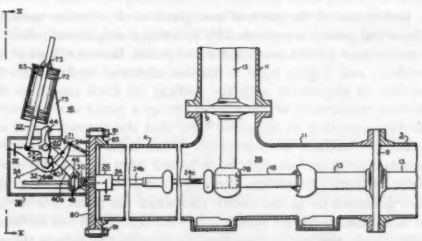
3,794,799

## GAS INSULATED SWITCH WITH ADJUSTABLE OVERCENTER TOGGLE ACTUATOR THEREFORE

Harvey E. Spindle; Jeffry R. Meyer, both of Pittsburgh, and Robert L. Hess, North Versailles, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1972, Ser. No. 238,381
Int. Cl. H01h 3/46, 3/26, 33/36
U.S. Cl. 200—153 G 16 Claims



An improved switch construction is provided having associated therewith an improved overcenter spring mechanism, which has a lost-motion connection with the lever assembly

for actuating the contact shaft of the switch. The construction is such that a driving motor is used to move the overcenter spring assembly to an overcenter position, at which time it moves over-toggle, and quickly effects opening or closing movements of the lever assembly, the latter driving the contact-operating shaft at its free end.

An auxiliary feature of the invention provides an in-toggle arrangement at the end of the opening and closing operations of the movable contact shaft by the use of a cam-coupling, interconnecting the end of the contact-operating shaft with the end of the free end of the operating lever.

As a further auxiliary feature of the invention, the switch construction and its associated mechanism are particularly adaptable for use in gas-insulated substations, of the type in which transmission of power occurs through an enclosed gas-insulated bus, capable, for example, of voltages of 46 KV through 500 KV, with a highly-insulating gas, such as sulfur-hexafluoride ($SF_6$) gas at a suitable pressure, such as 45 p.s.i.g. The switch, however, is capable of application in other environments.

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**ERRATUM**

For Class 206—45.1 G see:
Patent No. 3,794,793

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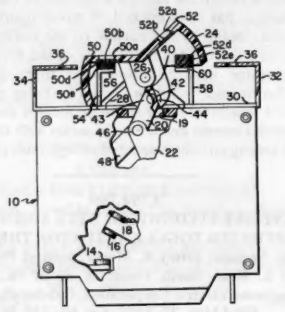
**3,794,800**

**ROCKER ACTUATED CIRCUIT BREAKER HAVING IMPROVED MEANS FOR FUNCTION INDICATION**

**Clifford A. Bodge, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Jan. 2, 1970, Ser. No. 123**
**Int. Cl. H01h** *9/16*
**U.S. Cl. 200—167 R** **6 Claims**




Indication of the state of energization of a rocker actuated electrical switch is provided by locating transparent indicia on two opaque panels mounted on opposite face portions of the rocker, and highly light reflective material underneath the rocker in alignment with the indicia on each panel so that pivotal movement of the rocker brings a panel and reflective surface together at the same time that the second panel and reflective surface are separated. When a panel and reflective surface are together, light is reflected from the reflective surface through the indicia thereby giving the effect of a light being turned on in the switch and when the reflective surface is separated from the panel, reflected light from the surface is effectively precluded from passing through the indicia thereby giving the effect of the light being turned off in the switch. Each reflective surface is resiliently mounted to ensure optimum alignment and a close contiguous relationship of the reflective surface with the panel when they are in the engaged position.

**ERRATUM**

For Class 219—10.55 see:
Patent No. 3,794,797

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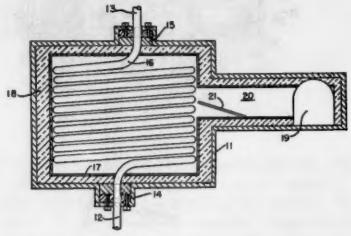
**3,794,801**

**SUPER HEATED VAPOR DRIVEN VEHICLE**

**Raymond E. Long, 26323 Ridge Rd., Damascus, Md. 20750, and Ralph C. Boles, Jr., 12005 Claridge Rd., Wheaton, Md. 20902**

**Division of Ser. No. 197,422, Nov. 11, 1972. This application Dec. 1, 1972, Ser. No. 311,189**
**Int. Cl. H05b** *9/06;* **H04m** *5/10*
**U.S. Cl. 219—10.55** **4 Claims**




The disclosure relates to an apparatus for producing super heated fluids by converting electromagnetic energy into thermal energy within the fluid. A coil of dielectric tubing is placed in a microwave resonant chamber and extends from a fluid inlet to a vapor outlet. The fluid to be super heated passes through the coil and is vaporized directly by microwave energy. The invention is particularly applicable to a vapor powered vehicle that produces no environmental pollution.

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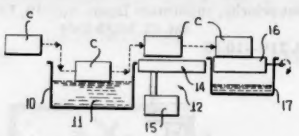
**3,794,802**

**INDUCTION HEATING COIL**

**Glenn R. Mohr, Linthicum, Md., assignor to Continental Can Company Inc., New York, N.Y.**

**Filed May 31, 1973, Ser. No. 365,602**
**Int. Cl. H05b** *5/08*
**U.S. Cl. 219—10.79** **10 Claims**




This disclosure relates to a heating coil for the induction heating of stripe-like areas of can bodies under controlled conditions utilizing electrical energy on the order of 10kHz and lower. The coil is of a unitary construction and is capable of substantially equally heating both the extreme end portions and the central portion of such stripe-like areas of can bodies.

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**3,794,803**

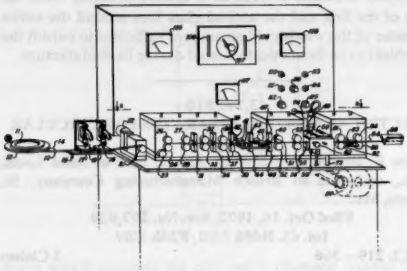
**APPARATUS AND METHOD FOR MAKING NEEDLE TUBING**

**James Valdeck, P.O. Box E, Steamboat Springs, Colo. 80477**

**Filed Apr. 21, 1971, Ser. No. 135,871**
**Int. Cl. B23k** *31/06*
**U.S. Cl. 219—61** **18 Claims**

This invention is directed to tube making apparatus and method including (1) a tube forming and welding unit, (2) a

vertical-drum drawing and/or sinking unit, (3) a derodding and cold blooming unit, (4) a horizontal-drum sinking unit,



(5) a cleaner and straightener unit and (6) a swager to be used with all the earlier mentioned units.

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**3,794,804**

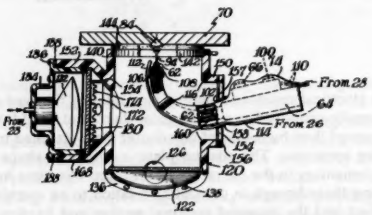
**METHOD FOR UNDERWATER ARC WELDING**

**Ernest H. Berghof, Orlando, Fla., assignor to Anna Welding Corporation, Orlando, Fla.**

**Division of Ser. No. 175,220, Aug. 26, 1971, which is a division of Ser. No. 886,245, Nov. 13, 1969, Pat. No. 3,632,950, which is a continuation-in-part of Ser. No. 701,700, Jan. 30, 1968, abandoned. This application Aug. 7, 1972, Ser. No. 278,425**

**Int. Cl. B23h 9/00**

**U.S. Cl. 219—137** **10 Claims**



According to the method of this invention water is kept away from the arc in underwater arc welding by means of a gas under a pressure greater than that of the water and, preferably, the wire feeding unit, welding gun, and electrode wire of the gas shielded, metal arc welding apparatus to be used underwater are enclosed in air-tight and water-tight containers. The containers and conduits are then internally pressurized with a shield gas to prevent the entry of water. The welding gun or at least its nozzle is inserted through a flexible sealed orifice in a small local housing chamber having a second opening. This second opening is placed against the work-piece to be welded. Shielding gas is supplied to the housing chamber at a pressure greater than the surrounding water to force water from the chamber and permit welding to take place in a region free of water.

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**3,794,805**

**MAGNETIC PULSE WELDING USING SPACED PROXIMITY CONDUCTOR**

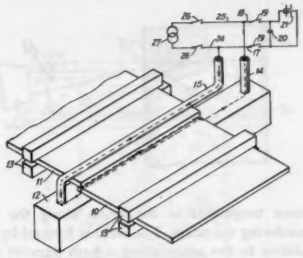
**Wallace C. Rudd, 8 Hidden Green Ln., Larchmont, N.Y. 10538**

**Filed July 2, 1971, Ser. No. 159,277**

**Int. Cl. B23k 19/00**

**U.S. Cl. 219—152** **21 Claims**

Method and apparatus for performing a work function such as forming, welding, forging, or cutting on one or more electrically conductive workpieces. Work force is a pulse of magnetic pressure produced about a proximity conductor which is



positioned closely adjacent the portion of the workpiece to be worked on and which is in conductive electrical connection with said portion of the workpiece.

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**3,794,806**

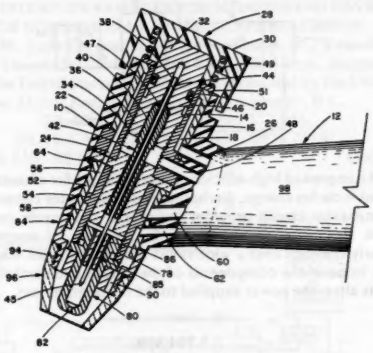
**PLASMA ARC WELDING TORCH**

**George A. Klasson, Port Washington, N.Y., assignor to Air Products and Chemicals, Inc., Allentown, Pa.**

**Division of Ser. No. 831,320, June 9, 1969, Pat. No. 3,632,951. This application June 24, 1971, Ser. No. 156,456**

**Int. Cl. B23k 9/00**

**U.S. Cl. 219—121 P** **4 Claims**



Disclosed is a plasma arc welding torch suitable for welding materials of construction. The torch is characterized in that the head is divided into two sections, each section carrying a different electrical potential, the sections separated by a combination electrical insulator and sealing member. There is further provided a collar for electrically insulating the torch tip from the nozzle and at the same time serving to aid in dissipating heat generated at the tip.

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**3,794,807**

**METHOD OF BEAM WELDING DISSIMILAR METAL PARTS**

**Cecil Bailey, Woodlyn; Oscar C. Frederick, Springfield, and Ramamurat R. Maurya, Philadelphia, all of Pa., assignors to General Electric Company, Philadelphia, Pa.**

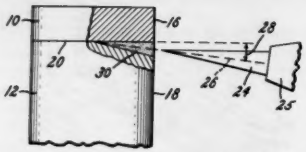
**Filed Apr. 10, 1972, Ser. No. 242,609**

**Int. Cl. B23k 15/00**

**U.S. Cl. 219—121 EM** **8 Claims**

An electron-beam welding method is used for joining dissimilar metal parts, one of which contains a refractory metal component. An electron beam directed at the other of said

parts at an acute angle to the seam between the two parts forms a conical fusion zone in said other part. The beam center line intersects said other part at a point spaced from the seam by an amount that locates the perimeter of the conical




fusion zone tangential to the seam along the fusion-zone length bordering the seam. The weld is formed by moving the beam relative to the seam along a path parallel to the seam while the central axis of the beam is maintained at said acute angle relative to the seam.

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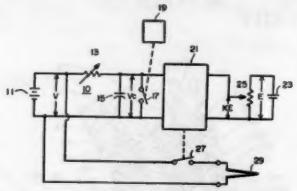
**3,794,808**

## POWER SUPPLY CIRCUIT FOR A HEATING ELEMENT

**Susumu Takagi, Tokyo, Japan, assignor to Yokogawa-Hewlett-Packard Ltd., Tokyo, Japan**

**Filed Aug. 2, 1972, Ser. No. 277,203**
**Claims priority, application Japan, Aug. 5, 1971, 46-59261**
**Int. Cl. H05b** *1/02*
**U.S. Cl. 219—497** **3 Claims**




An improved high-efficiency power supply for a heating element includes charge, discharge, and comparator circuits. The comparator circuit provides the proper duty cycle and controls the power to the heater for keeping its temperature nearly constant over a wide range of input voltages. Changing the value of the components of the charge and discharge circuits alters the power supplied to the heating element.

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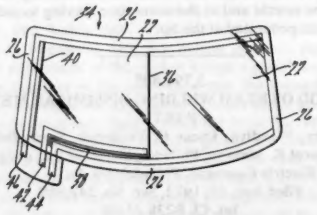
**3,794,809**

## VEHICLE WINDSHIELD

**Jerry G. Beck, Southfield; Richard T. Dickason, Birmingham, and Donald J. Ray, Southgate, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.**

**Filed Dec. 29, 1972, Ser. No. 316,322**
**Int. Cl. B60l** *1/02*
**U.S. Cl. 219—203** **8 Claims**




A vehicle windshield is disclosed which is constructed of an inner and an outer glass lite. These lites have first and second laminating interlayers therebetween. A transparent, electrically conductive material is disposed between the first and the second laminating interlayers. The conductive coating on the electrically conductive material is spaced inwardly from the edges of the first and the second glass lites around the entire perimeter of the windshield an amount sufficient to permit the windshield to be hermetically sealed during its manufacture.

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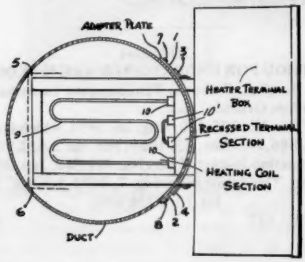
**3,794,810**

## ELECTRICAL HEATING APPARATUS FOR CIRCULAR DUCTS

**Jerome F. Brasch, and Rolf G. Albers, both of Saint Louis, Mo., assignors to Brasch Manufacturing Company, St. Louis, Mo.**

**Filed Oct. 16, 1972, Ser. No. 297,929**
**Int. Cl. H05b** *1/00*; **F24h** *3/04*
**U.S. Cl. 219—366** **2 Claims**




An electrical resistance heating apparatus of the type conventionally employed in a rectangular duct is adapted for use in a curved duct by means of an adapter plate attached to the heating apparatus. The adapter plate is curved in shape and complementary to the curvature of the duct. The plate has an opening therethrough in coinciding relation to an opening in the duct and the recessed terminal section and heating coil section of the heating apparatus extend through the plate opening and the duct opening for positioning within the duct with the heater terminal box section of the heating apparatus being positioned outside the duct. The adapter plate is firmly secured to the duct by suitable fasteners when the heating apparatus is inserted into the duct through the duct opening.

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**3,794,811**

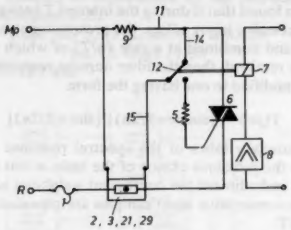
## AUTOMATIC SAFETY SWITCH MEMBER

**Karl Hehl, Siedlung 183, D-7291 Lossburg, Germany**

**Continuation-in-part of Ser. No. 132,508, April 8, 1971, Pat. No. 3,697,812. This application July 19, 1972, Ser. No. 273,032**
**Claims priority, application Germany, July 26, 1971, 2137285. The portion of the term of this patent subsequent to Oct. 1, 1989, has been disclaimed.**
**Int. Cl. H05b** *1/02*
**U.S. Cl. 219—501** **8 Claims**

An automatic safety circuit for monitoring the power switching means controlling the main current circuit to an electric power load to automatically cut off the current in the event of a malfunction of the power switching means which causes it to continue to remain in its closed condition. The auxiliary switching circuit includes a switching arrangement for selectively disrupting the main current circuit, the switching arrangement being composed of a heatable switching element, an electrical resistance heating element

formed as a coil which concentrically encloses the heatable switching element and an electrically insulating supporting




sleeve which supports the coil and is disposed coaxial to the heatable switching element.

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**3,794,812**

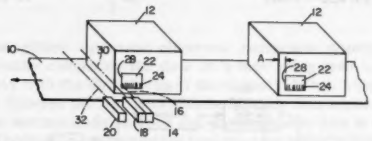
## SENSING APPARATUS

**Jack A. Bryant, Boston, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.**

**Filed Apr. 17, 1972, Ser. No. 244,757**

**Int. Cl. G06k** *7/10*; **G11c** *11/02*; **G06k** *19/06*; **G01n** *21/30*

**U.S. Cl. 235—61.11 E** **14 Claims**




Sensing apparatus includes scanning means for producing electrical signals corresponding to code marks in a code on an article as the code is scanned along a path corresponding to the disposition of the code marks. The code defines a series of digit spaces and each digit space defines a plurality of digit value positions. The apparatus further includes means for generating a corresponding plurality of code-sampling gate signals in each digit space, a code-sampling gate signal being generated corresponding to each digit value position in each digit space, and means for producing an output in response to an electrical signal corresponding to a code mark produced by the scanning means coincident with a code-sampling gate.

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**3,794,813**

## VERIFICATION SYSTEM

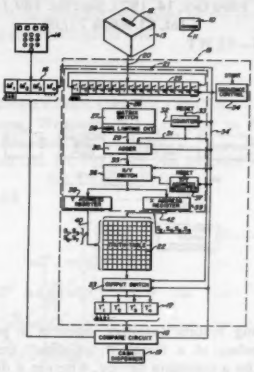
**William L. Spetz, Cincinnati, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio**

**Filed July 28, 1972, Ser. No. 276,028**

**Int. Cl. G04q** *9/00*; **G06r** *7/00*

**U.S. Cl. 235—61.7 B** **10 Claims**

A system for ascertaining if the user of a card, such as an identification or credit card, is the owner or is otherwise in rightful possession. The system includes a card bearing an encoded multi-digit number which is correlated in a non-mathematical fashion to another and different multi-digit number memorized and known only by the card owner, this latter number being provided the owner at the time the card is issued to him. Also included in this system is an algorithm circuit for transforming the card number to a transformed number, and a comparator for comparing the transformed number with the memorized number. The card number is entered into the system via a reader, while the memorized number is introduced via a keyboard or the like. The number transformation means includes a truth table or storage means containing a plurality of addressable locations containing random digits which bear no mathematical relatiohship to their addresses. The truth table is addressed to access random digits as many times as there are digits in the memorized number. The random digits from the truth table form the transformed



number which is compared on a digit-by-digit basis with the digits of the memorized number. Only if a favorable comparison results, is the holder deemed the rightful possessor of the card.

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**3,794,814**

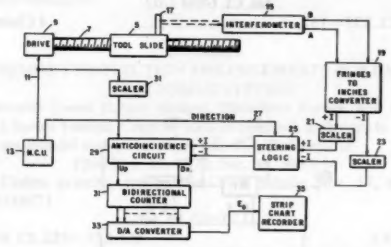
## CONTINUOUS DYNAMIC ERROR MONITORING DEVICE FOR NUMERICALLY CONTROLLED MACHINES

**Clark M. Lay, Clinton; James H. Burkhardt, Jr., Knoxville, and Thomas W. Davidson, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed Feb. 15, 1973, Ser. No. 332,944**

**Int. Cl. G01b** *11/04*; **G06g** *7/00*; **H03k** *13/00*

**U.S. Cl. 235—92 MP** **7 Claims**

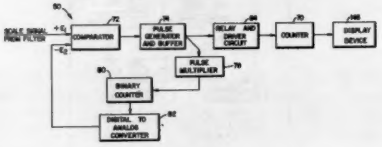



A dynamic error monitoring system has been provided which measures the instantaneous value of a positionable machine member by direct, instantaneous and continuous comparison between movement command pulses of a discrete value with pulses of the same discrete value from an independent distance measuring device such as command pulses from a numerical control unit and pulses from an interferometer indicative of the positionable member movement from a reference position. Command pulses from the numerical control unit are compared with the laser-interferometer-derived pulses in a bidirectional counter following suitable scaling, steering, and anticoincidence testing. The net count output of the counter representing the dynamic error is converted to an analog signal that is displayed on a recorder. The system gives a continuous record of the dynamic machine tool position over the entire length of the positionable member travel as well as the static positioning error.

## 3,794,815
## TOTALIZER FOR WEIGHING SYSTEMS

Gilbert A. Godwin, Oakland, and Armando A. Aiguesvives, Maplewood, both of N.J., assignors to Howe Richardson Scale Company, Clifton, N.J.

Filed Oct. 14, 1971, Ser. No. 189,127
Int. Cl. H03k 21/30
U.S. Cl. 235—92 WT 11 Claims

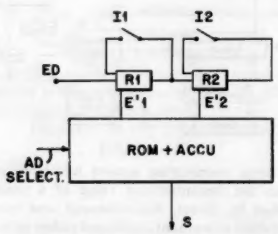



A weighing system totalizer wherein a pulse generator produces pulses at a constant repetition frequency to be counted in by a counting device, wherein a digital-to-analog converter cumulatively converts the generator-produced pulses into a feedback d.c. signal, and wherein a signal comparing circuit is responsive to the feedback d.c. signal and to a weight-representing d.c. signal to start and stop operation of the pulse generator for providing a generator-produced pulse train in which the number of pulses is representive of the magnitude of the weight-representing d.c. signal.

## 3,794,816
## DIGITAL FILTERS WITH IMPULSE RESPONSE MODIFIED BY DATA CIRCULATIONS OCCURRING BETWEEN SUCCESSIVE DATA INPUTS

Daniel Jacques Esteban, La Gaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,690
Claims priority, application France, Mar. 17, 1971, 71.10484
Int. Cl. G06f 1/02
U.S. Cl. 235—152 4 Claims




In a digital filter to which is applied a succession of binary coded input signals $X(NT)$, $X(NT-T)$, $-X(NT-iT)$ $-x[NT(N-1)]$ at a frequency $F=1/T$, the filter output in the time domain at time $NT$ being related to the input by the approximation

$$y(NT)=\frac{1}{T}\sum_{i=0}^{r} h(iT)X(NT-iT)$$

where $r$ being the number of input digits that can be simultaneously weighted, $h(iT)$ being the filter impulse response or coefficient at frequency $F$. Usually, such filters exhibit a comb type impulse response spectrum of the form

$$Y(jw)=1-e^{-jwT}=2/\sin \text{ weight}/2.$$

It has been found that if during the interval $T$ between application of successive input pulses, the present input is repeatedly weighted and combined at a rate $(n/T)$ of which $m$ out of $n$ results are retained, then the filter impulse response spectrum becomes modified to one having the form

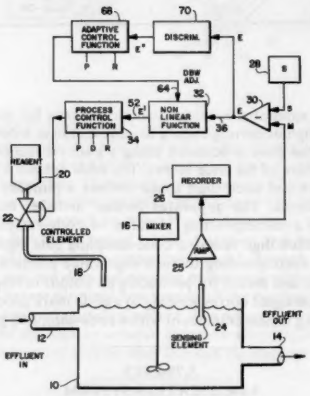
$$Y(jw)=[\sin(mwT/2n)]/[\sin(wT/2n)]$$

The secondary lobes of the spectral response being controlled by the judicious choice of the ratio $m$ out of $n$. In the preferred embodiment the coefficient weighting and combining of two consecutive input samples are repeated $m$ times at the rate $n/T$.

## 3,794,817
## ADAPTIVE NON-LINEAR CONTROL SYSTEM

Francis G. Shinskey, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Oct. 31, 1972, Ser. No. 302,632
Int. Cl. G05b 11/01
U.S. Cl. 235—150.1 15 Claims

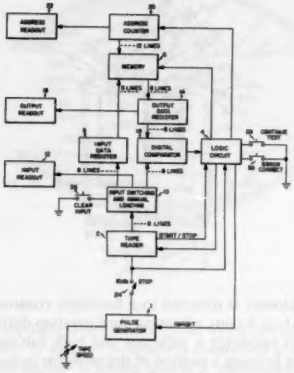



An adaptive control system for use with non-linear processes, utilizing a non-linear controller with remotely adjustable deadband width, and an adaptive controller to perform said adjustment. The adaptive controller operates on the same deviation signal as the non-linear controller, but has a discriminator circuit in its input that reacts in opposite directions to high and low-frequency components in the deviation signal. Oscillations of the process at the natural period of the control loop are made to cause the non-linear deadband width to expand, while drift or offset causes it to contract. A 50 to 1 change in process gain can be accommodated with this system. The system is especially successful on non-linear processes such as the pH control of a chemical waste of randomly variable composition. By avoiding continuous cycling, the system can result in reduction in reagent usage of 50 percent, while still meeting effluent specifications.

## 3,794,818
## AUTOMATIC MEMORY TEST AND CORRECTION SYSTEM

**Peter D. Kennedy, Casselberry, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed July 3, 1972, Ser. No. 268,429**
**Int. Cl. G06f *11/00***
**U.S. Cl. 235—153 AM** **5 Claims**

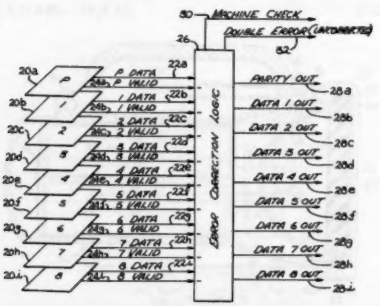


A simplified automatic electronic correction system for continually comparing the data on a tape being read into a memory with the data stored in the memory. When a discrepancy between the tape data and the memory data occurs the tape is automatically stopped and the erroneous item is read out of both the memory and the tape together with the item location onto suitable displays. Correction may be made automatically or manually.

## 3,794,819
## ERROR CORRECTION METHOD AND APPARATUS

**Andrew R. Berding, San Jose, Calif., assignor to Advanced Memory Systems, Inc., Sunnyvale, Calif.**

**Filed July 3, 1972, Ser. No. 268,491**
**Int. Cl. G11c *29/00***
**U.S. Cl. 235—153 AM** **4 Claims**

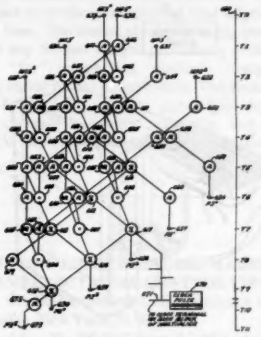



An improved error correction method and apparatus which is capable of correcting single digital errors and capable of detecting multiple errors. In accordance with the invention as used in a memory system, a plurality of storage cards are used, each organized so as to provide a single data output and a data valid output, the data valid output being determined as a result of a parity check of a multiple bit memory signal from which the data output is selected as a result of further addressing. Similarly, one further storage card is used to provide a single parity check signal for the data signals from the other storage cards and to provide a parity valid signal in the same manner as the data valid signals. By applying these various signals to a gating system, an error in any one of the signals may be detected, and if in a data signal, may be corrected. Multiple errors may similarly be detected and noted by the provision of a signal indicating such multiple errors.

## 3,794,820
## BINARY MULTIPLIER CIRCUIT

**John L. Robinson, Wenonah, N.J., assignor to Philco-Ford Corporation, Blue Bell, Pa.**

**Filed Oct. 16, 1972, Ser. No. 297,955**
**Int. Cl. G06f *7/54***
**U.S. Cl. 235—164** **9 Claims**

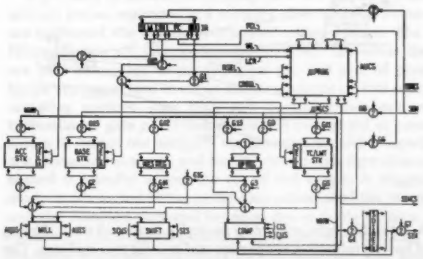


A fast binary multiplier in the form of a matrix of partial product generators and addition circuits wherein the number of columns of the matrix corresponds to the largest number of digits in the multiplicand and the number of rows in the matrix corresponds to the largest number of digits of the multiplier for which the multiplier is designed. The multiplier is constructed much like a parallel multiplier but operates like a serial multiplier.

## 3,794,821
## MEMORY PROTECTION ARRANGEMENTS FOR DATA PROCESSING SYSTEMS

**Kenneth James Hamer Hodges, Blandford Forum, and Peter Charles Venton, Colehill, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland**

**Filed Nov. 15, 1972, Ser. No. 306,644**
**Claims priority, application Great Britain, Nov. 17, 1971, 53310/71**
**Int. Cl. G06f *11/12***
**U.S. Cl. 235—153 AM** **1 Claim**



A data processing device including memory segmentation and protection arrangement of the type provided by so-called

segment descriptors employing a check- code in which the check-code, after formation, is rotated by a predetermined number of bits.

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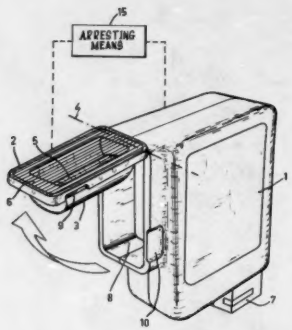
3,794,822
ELECTRONIC FLASH UNIT
Jozef Hubert Michel Bergmans, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 24, 1971, Ser. No. 183,437
Claims priority, application Netherlands, Sept. 29, 1970, 7014266
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 1 Claim




In an electronic flash unit, a simple solution is effected for rotating a reflector associated with the unit so that a scene to be photographed can be lighted by direct flash illumination or by indirect flash illumination. According to the invention, the axis of rotation of the reflector coincides with a horizontal rib of the box-like flash unit. The longitudinal axis of an elongated electronic flash lamp provided in said reflector is at right angles to the axis of rotation of the reflector.

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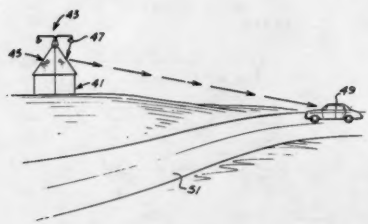
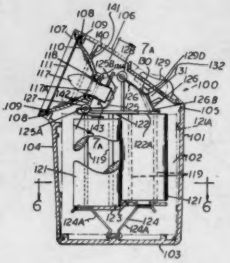
3,794,823
LIGHTING DISPLAY WITH COMPLEX IMAGE MOTION
Joe W. Fowler, 5034 Franklin Rd., Nashville, Tenn. 37220
Filed July 26, 1971, Ser. No. 166,200
Int. Cl. G09f 19/00
U.S. Cl. 240—10.1 5 Claims




A rotatable light source is centrally mounted on a sloping roof having reflective properties and at least two surfaces. The horizontal positioning and angle of reflection of the light source may be variable. Reflections from the roof produce complex light image motion to a remote viewer.

3,794,824
FLASHLIGHT CONSTRUCTION
Joseph G. Bacevius, Shelton, Conn., assignor to Paul G. Garrity, Stamford, Conn.
Filed Sept. 25, 1972, Ser. No. 291,593
Int. Cl. F21l 7/00
U.S. Cl. 240—10.6 R 16 Claims




This disclosure is directed to a flashlight construction of a disposable type having a housing configuration defining a lens opening for receiving a reflector and bulb sub-assembly. A bulb socket forming a portion of the reflector includes retaining means whereby the bulb can be readily snapped or threaded with the aid of an adaptor into position and retained within the bulb socket to define the sub-assembly. A pair of spring contact members connect the bulb into electrical circuit with a battery source of electrical energy. The arrangement of the spring contact members and the configuration of the housing is such so as to render optional the type and/or size of the battery which can be used within the housing without requiring any change in the physical arrangement of the housing and/or rearrangement of any of the component parts of the flashlight construction.

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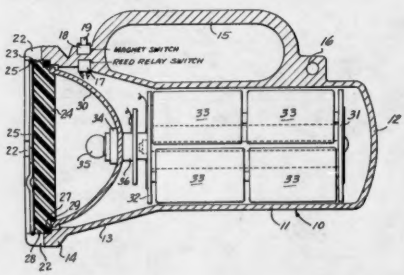
3,794,825
WATERPROOF FLASHLIGHT
Carl S. Krupansky, 5823 Arapaho Dr., San Jose, Calif. 95123
Filed May 5, 1972, Ser. No. 250,678
Int. Cl. F21v 31/02; F21l 7/00
U.S. Cl. 240—10.63 2 Claims



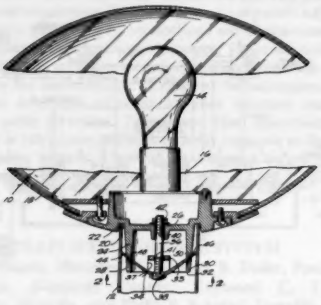

A waterproof flashlight which includes a cast aluminum housing having as its only opening the lens support. The lens is sealed to the flashlight by compression against an O-ring with the lens being secured in place by a snap ring. A magnetic device actuates a reed switch to turn the light on and off without requiring openings through the housing.

3,794,826

## ARRANGEMENT FOR ACHIEVING HOLDING ENGAGEMENT WITH THE INSIDE OF A PIPE OR STEM

Edward R. Jablonski, South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Filed July 27, 1972, Ser. No. 275,888
Int. Cl. F21s *1/10*
U.S. Cl. 240—84 15 Claims



A pole-top light is connected to the open end of the hollow support hole. A support structure is connected to the light assembly and carries a spring which is positioned within the pole. A threaded rod connects the spring member to the support structure and itself has a threaded connection so that rotation of the rod displaces the spring in an axial direction against its inherent bias causing the spring member to expand laterally into binding engagement with the interior walls of the pole. The threaded rod is accessible from the exterior of the pole to permit selective engagement of the spring member with the interior pole walls or disengagement therefrom. Several alternative spring forms are disclosed (a bowed spring, resilient discs, etc.) as well as various arrangements of the threaded member to achieve displacement of the spring.

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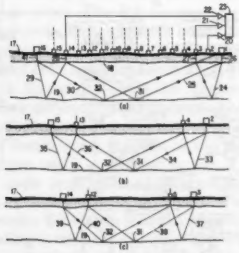
3,794,827

## INVEL SYSTEM OF VELOCITY DETERMINATION

Moses B. Widess, Houston, Tex., assignor to Amoco Production Company, Tulsa, Okla.

Filed Jan. 8, 1973, Ser. No. 322,056
Int. Cl. G01v *1/36*
U.S. Cl. 340—15.5 TC 5 Claims



This is a new way of compositing multifold common-depth-point data from seismic prospecting operations to improve the making of static corrections, particularly when determining velocity. Such static corrections eliminate time differences in arrival of reflected seismic events on the various traces of a seismic spread due to differences in thickness of the low velocity or "weathered" layer below the geophones, to differences in surface elevation, and the like. Seismic waves are generated successively at generating points, each near the earth's surface. Seismic waves are received and reproducibly recorded at geophones at least one of which in each case is close to the generating point and another is near the location of another generating point. These spatial relationships are symmetrical. Reproduced reflected waves from each generating point received at the respective near geophone locations are composited at approximately equal peak amplitudes. This procedure is then repeated for new generating and receiving points which maintain approximately constant the mean location of reflection points on the seismic reflecting beds. Visual traces equivalent to the composited "short" traces are reproduced after elimination of the normal moveout correction. The reflections from a common reflecting bed are aligned by introducing a static correction into each composited trace to produce substantial time alignment at a mean reflection time. The identical seismic static correction is then applied to any further record processing of the seismic data from the "far" geophones, similarly composited, before producing visual traces of such data. The procedure is valuable both for making velocity panels for determination of velocity vs. depth in seismic prospects, and in determining depth and/or dip of reflecting subsurface discontinuities.

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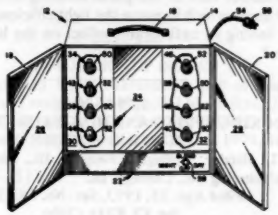
3,794,828

## ILLUMINATING LIGHT BLENDING MAKEUP MIRRORS AND ELECTRICAL CONTROL CIRCUIT

Ronald G. Arpino, Branford, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 69,046, Sept. 3, 1970, abandoned. This application Mar. 15, 1972, Ser. No. 235,048
Int. Cl. F21v *33/00*
U.S. Cl. 240—4.2 4 Claims

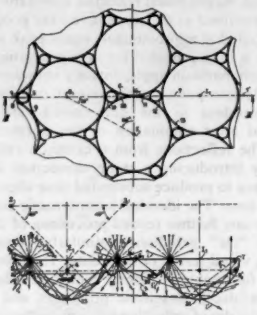


A plurality of incandescent lamps and one or more makeup mirrors are incorporated in a portable case. Some of the lamps are unfiltered, the others are provided with red filters. The red filtered lamps are all connected in parallel. The white lamps are also connected in parallel, and the two sets of parallel lamps are connected in series across a source of 110 volts alternating current. The high and common terminals of a bidirectional gate control thyristor are connected in parallel across the set of red lamps. A variable resistor and a capacitor are connected in series, and the RC circuit thus formed is connected in parallel across the set of red lamps. A triggering diode is connected between the gate terminal of the thyristor and the common terminal between the variable resistor and capacitor. The triggering diode is preferably incorporated into the same integrated circuit as the bidirectional gate control thyristor. The white incandescent lamps may be provided with light absorbing filters in order to balance the intensities of the two sets of lamps.

## 3,794,829
## NON-LUMINANCE LIGHTING PANEL

Ignacio Goytisolo Taltavull, 83 Madrazo, Barcelona, Spain

Filed Apr. 20, 1972, Ser. No. 245,904
Int. Cl. F21v 5/00
U.S. Cl. 240—106 R 11 Claims

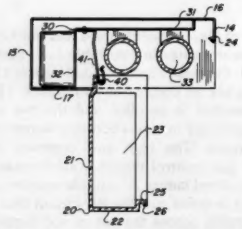


A transparent prismatic low luminescent lighting panel of a type having a plurality of refracting prismatic elements on its outer surface in the form of pyramids or cones, said elements having curved surfaces, wherein said elements in conical form have cross-sectional profiles and are situated on the surface of the exterior face of said panel such that luminous rays which by reason of their angle of incidence relative to the panel, suffer little energy loss on travelling through the thickness of the panel and which because of incidence at certain points of the panel, emerge from said conical elements defining angles of between 60° and 90° with respect to the axis of symmetry of said conical elements strike an adjacent cone and suffer total internal reflection, thus reducing the low luminance of said panel. Said refracting elements of pyramidal form are situated on the exterior face of the panel forming therebetween narrow, flat zones which improve the light efficiency of said panel without having an unfavorable effect on the luminescence of said panel.

## 3,794,830
## LOCKING SPRING AND HINGE FOR COVER OF LIGHTING FIXTURE

Robert L. Hitzler, Arlington Heights, Ill., assignor to Alkco Manufacturing Co., Chicago, Ill.

Filed Apr. 23, 1973, Ser. No. 353,232
Int. Cl. F21v 17/00
U.S. Cl. 240—147 3 Claims

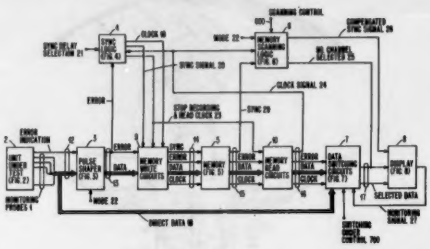


A combination locking spring and hinge for securing a light-transmitting cover to the housing of a light fixture. A spring band strap serves both as a pivotal hinge for manually opening and closing the cover, and as a locking spring urging a web on the cover into locking engagement with a tab on the housing.

## 3,794,831
## APPARATUS AND METHOD FOR MONITORING THE OPERATION OF TESTED UNITS

Richard F. Frankeny, Austin, Tex., and Sidney D. Johnson, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 1, 1972, Ser. No. 258,757
Int. Cl. G11b 13/00
U.S. Cl. 340—172.5 11 Claims

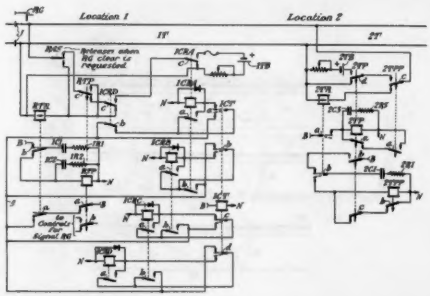


Signals from a tested electronic unit are continuously stored in sequence on a rotating disc memory while the unit is monitored for errors. When an error occurs, substantially all the recorded signal sequences are displayed as an image on a CRO screen. A manual control selects portions of the stored sequences for display, scanning the image in accordance with manual speed and direction instructions. The manual instructions control stepping of a first counter which is compared for equality with a second counter tracking currently accessible disc locations. Equal comparison triggers the CRO horizontal scan to cause display of a desired and manually variable portion of the recorded signal sequences. Circuits provide pulse stretching and peak detection necessary to efficiently utilize the tester with a variety of tested units and displays.

## 3,794,832
## BI-DIRECTIONAL CODED TRACK CIRCUITS WITHOUT INSULATED JOINTS

Donald D. Huffman, Penn Hills Township, Allegheny County, and Andrew J. Carey, West Mifflin, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Nov. 21, 1972, Ser. No. 308,495
Int. Cl. B61l 23/30
U.S. Cl. 246—33 R 13 Claims



At each end of a track stretch, a relay chain driven by a code transmitter at times connects across the rails in repeated sequences a polar, code following track relay, a track battery, and a rail shunt path. A similar sequence of rail connections at each intermediate repeater location is produced by a front contact repeater and a decoding repeater of the correspond-

ing track relay. Each repeater relay has a selected slow release to produce the sequence following each response by the track relay to a received energy pulse. The pulse following operation of each end location track relay is decoded by a repeater relay which connects the track relay continuously across the rails and inhibits relay chain operation. A shorter relay chain at one end prevents scrambled code and provides a dominant pulse transmitter with no train occupancy and no entering signal cleared. Each repeater location transmits in either direction and requires no insulated joints to separate adjoining sections since track battery connections are of alternately opposite polarity from location to location. The track rail shunt applied following pulse transmission at each location prevents response by the associated track relay to the subsequent pulse transmitted from the adjacent advance location and thus maintains pulse direction. To prevent false operation, each track relay is rail connected with polarity opposite to the same location track battery. Clearing an entering signal sets up pulse transmission from the other end.

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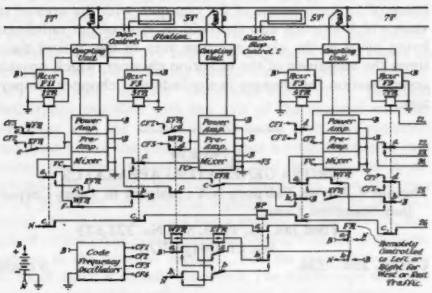
**3,794,833**

## TRAIN SPEED CONTROL SYSTEM

**Frank V. Blazek, Monroeville; William B. Dufer, Penn Hills Township, Allegheny County; Raymond C. Franke, Glenshaw, all of Pa., and Philip R. Schatzel, Danville, Calif., assignors to Westinghouse Air Brake Company, Swissvale, Pa.**

**Filed May 25, 1972, Ser. No. 256,888**
**Int. Cl. B61l 3/10**
**U.S. Cl. 246—63 C** **9 Claims**



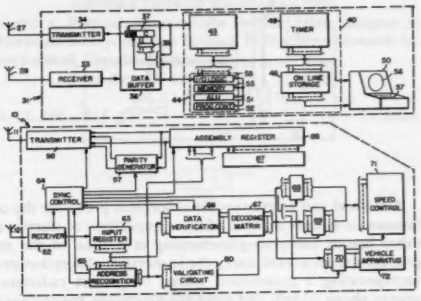
High frequency detector track circuits are coupled to the rails at crossbonds which divide the track stretch into sections without insulated joints. The HF transmitters supply track energy both directions from alternate bonds into each track section of the adjoining pair. Correspondingly tuned receivers at the other end of each section control track relays which indicate the track occupancy condition. Successive pairs of track sections have different frequencies selected on a random basis from a predetermined plurality. Train control energy of a different, single frequency is supplied to the rails at the exit end of each section and is modulated by one of a plurality of low frequency code rates selected in accordance with the track occupancy condition of advance sections as determined by the track circuits. Each train is equipped with train control apparatus including at least cab signals and overspeed protection. Receivers inductively coupled to the rails pick up and supply the speed signals through a demodulator and active filters to register an allowed speed indication in accordance with the detected code rate. Train speed sensing apparatus registers the actual train speed. Overspeed detection apparatus then compares allowable and actual speeds, detects an overspeed condition, and actuates an automatic braking action if the train operator does not initiate a speed reduction within a preset time limit.

**3,794,834**

## MULTI-COMPUTER VEHICLE CONTROL SYSTEM WITH SELF-VALIDATING FEATURES

**John H. Auer, Jr., Fairport; Donald B. Marsh, Rochester, and Henry C. Sibley, Adams Basin, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.**

**Filed Mar. 22, 1972, Ser. No. 237,196**
**Int. Cl. B61l 27/04**
**U.S. Cl. 246—187 B** **17 Claims**



An automatic vehicle control system for controlling the operation of a vehicle from a set of parallel operating computers in a central control station. A data communication link transmits vehicle performance reports from the vehicle to the central control station and transmits vehicle command messages from the central control station to the vehicle. Validating circuitry in the vehicle validates received vehicle command messages by verifying the messages originated from both computers in the central control station. A portion of the vehicle command message included in the vehicle performance report is subsequently used by the two computers to validate the performance report message transmitted from the vehicle to the central control station.

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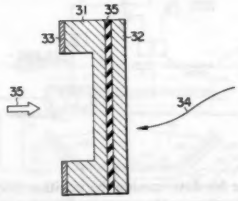
**3,794,835**

## IMAGE PICKUP DEVICE

**Tadaaki Hirai, and Eiichi Maruyama, both of Kodaira-shi, Tokyo, Japan, assignors to Hitachi Ltd., Tokyo, Japan**

**Filed Apr. 6, 1971, Ser. No. 131,717**
**Claims priority, application Japan, Apr. 6, 1970, 45-28619**
**Int. Cl. H01l 15/00**
**U.S. Cl. 250—211 J** **7 Claims**

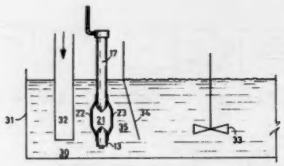



A light conversion element used for a vidicon image pickup target characterized in that an amorphous semiconductor comprising more than 50 atomic percent of selenium and/or sulfur is disposed directly on a IV*a* group silicon, germanium or similar semiconductor single crystal or crystalline layer, or on such a semiconductor single crystal or crystalline layer with a very thin insulation layer, such as a very thin oxide layer interposed therebetween whereby a hetero-junction is formed in the element.

## 3,794,836
## IMMERSIBLE ABSORPTION PROBE

Douglas Albert Hinckfuss, Broken Hill, New South Wales, Australia, assignor to The Zinc Corporation Limited

Filed Mar. 21, 1972, Ser. No. 236,404
Claims priority, application Australia, Mar. 25, 1971, 4425/71
Int. Cl. G01n 21/26
U.S. Cl. 250—363 12 Claims

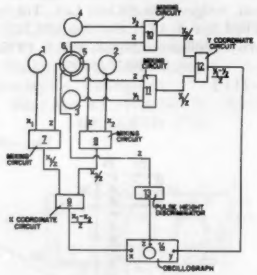


A method and an immersible absorption probe for the continuous on-stream analysis of the composition of slurries and other liquids comprising immersing in a zone of the main process stream of said slurry the immersible absorption probe incorporating a radioactive source of gamma radiation of energy above 20 keV and a radiation detector, the radioactive source and the radiation detector being spaced from each other in said zone so that the main process stream may flow between them.

## 3,794,837
## DEVICE FOR DETERMINING THE POSITION COORDINATES OF A LIGHT-IMPULSE EMITTING POINT

Adrianus Klem, Delft, and Hugo Vlasbloem, Maasland, both of Netherlands, assignors to N.V. Optische Industrie De Oude Delft, Delft, Netherlands

Filed Apr. 10, 1972, Ser. No. 242,659
Claims priority, application Netherlands, Apr. 13, 1971, 7104844; June 17, 1971, 7104304
Int. Cl. G01t 1/20
U.S. Cl. 250—366 2 Claims

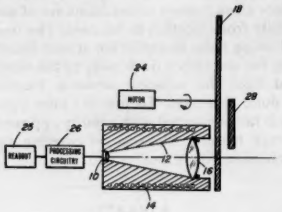


A device for determining the position coordinates of a scintillation on the anode screen of an image intensifier tube, which forms part for instance of a gamma camera containing five photomultipliers, four of which being mounted in a square that is centred on the axis of the fifth, the difference of the voltages of two multipliers divided by the voltage of the fifth multiplier being used as signal representative for one position coordinate, filters of which the transmittance varies over the surface being applied to the fifth photomultiplier and the anode screen to compensate for distortion and vignetting of the image on the anode screen.

## 3,794,838
## COMPENSATION MEANS FOR AMBIENT TEMPERATURE CHANGES OF A RADIATION CHOPPER IN A RADIOMETER

Morris Weiss, Stamford, and Robert E. Buckley, Norwalk, both of Conn., assignors to Barnes Engineering Company, Stamford, Conn.

Filed Feb. 10, 1972, Ser. No. 225,044
Int. Cl. G01t 1/16
U.S. Cl. 250—351 5 Claims

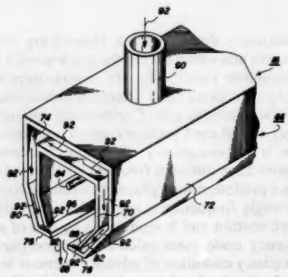


A radiometer is provided with optics, a reference black body cavity, a radiation detector located at the apex of the black body cavity, a radiation chopper external to the black body cavity having alternate mirrored and open segments, and conventional electronic processing circuitry for receiving and processing an output signal from the radiation detector. A blackened vane is positioned in close proximity to the chopper for tracking the temperature of the radiation chopper, and extends into the field of view of the radiometer on the occurrence of an open sector of the chopper, with the area of the vane which extends into the field of view of the radiometer being equal to the clear aperture area of the optical means times the emissivity of the radiation chopper, which provides compensation for changes in the radiation chopper temperature.

## 3,794,839
## CORONA GENERATING APPARATUS

Thomas F. Hayne, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1973, Ser. No. 322,673
Int. Cl. H01j 37/26
U.S. Cl. 250—324 8 Claims



A corona generating apparatus in which the shield thereof includes a control portion arranged to regulate the corona discharge from the discharge electrode. The shield directs fluid-flow over the control portion for effecting the removal of particles therefrom.

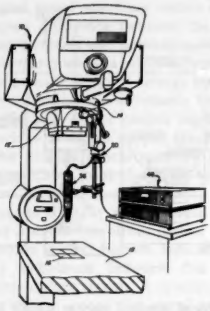
The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,794,840

## METHOD AND APPARATUS FOR DIRECTING A RADIATION BEAM TOWARD A TUMOR OR THE LIKE

Walter P. Scott, c/o Charlotte Memorial Hospital, P.O. Box 2554, Charlotte, N.C. 28201

Filed Mar. 27, 1972, Ser. No. 238,322
Int. Cl. G01j 39/18
U.S. Cl. 250—363 8 Claims



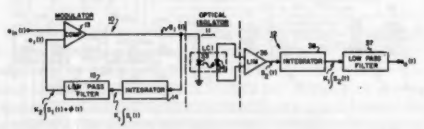
Method and apparatus for accurately directing a therapeutic radiation beam to a tumor or the like within a human body, including the implantation at the tumor of a source emitting radioactive rays traveling in a straight line therefrom, sensing this ray emission to determine a straight line path to the tumor, and directing the radiation beam toward the tumor by having the center line of the radiation beam coincide with the straight line path determined from the ray emitting source. Preferably, a radioactive isotope is implanted in the tumor as the source, and a collimating tubular channel member is selectively mounted on the radiation head of a radiation teletheraphy machine with the axis of the channel member coinciding with the center of the beam from the radiation head. One end of the channel member is open to receive rays emitted from the implanted source and the other end is associated with a device for detecting these rays. The detecting device produces an electrical signal in response to the rays sensed, this electrical signal being greater as the straight line path of emitted rays come into coincidence with the axis of the opening in the channel member, and the magnitude of the electrical signal is visually displayed. The teletherapy machine operator manipulates either the patient or the radiation head until the displayed signal indicates a maximum magnitude, removes the channel member and energizes the radiation head.

3,794,841

## LIGHT COUPLING DATA TRANSFER SYSTEM

Louis Ciro Cosentino, 24350 Holly Ln. North, Wayzata, Minn. 55391, and Peter Richard Bove, 23 Sheffield Ave., Spotswood, N.J. 08884

Filed July 25, 1972, Ser. No. 274,956
Int. Cl. H04b 9/00
U.S. Cl. 250—199 4 Claims



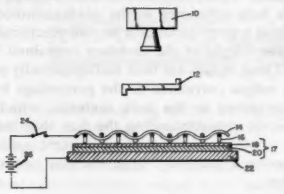

A system especially for use in accurately transmitting patient derived data comprising a light coupling unit employed for patient isolation purposes, a modulating unit for generating a constant amplitude switching waveform of a frequency higher than the patient derived data having zero crossings which are modulated thereby to drive the light coupling unit between an on and off state, and a demodulating unit connected from the light coupling unit for demodulating the zero crossing information derived to essentially recover the patient derived data.

3,794,842

## GENERATION OF RADIOGRAPHS

Richard A. Fotland, Warrensville Heights, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

Filed Dec. 13, 1972, Ser. No. 314,635
Int. Cl. G03b 41/16
U.S. Cl. 250—315 6 Claims



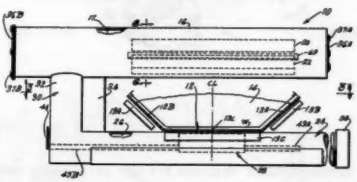
Radiographs are generated in an apparatus comprising a fine mesh screen coated with an X-ray sensitive photoconductor by exposing said screen to an X-ray image while said coated screen is in physical contact with an insulating charge-supporting member and while an electrical potential is applied between the screen and an electrically conducting plate located on the side of the insulating member which is opposite the side the coated screen is on, and thereafter electrostatically toning the latent image formed on the charge-supporting member as a consequence of the X-ray exposure.

3,794,843

## GAUGE FOR DETERMINING THE PERCENTAGE BY WEIGHT OF MOISTURE CONTAINED IN A BULK MATERIAL TRANSPORTED ON A MOVING CONVEYOR

You Min Chen, Cincinnati, Ohio, assignor to The Ohmart Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 142,127, May 11, 1971. This application Dec. 29, 1972, Ser. No. 319,355
Int. Cl. G01n 23/02
U.S. Cl. 250—359 8 Claims



A moisture gauge including a radiation source for irradiating with fast neutrons and gamma radiation a bulk substance having moisture contained therein, a detector responsive to gamma radiation which has interacted with a predetermined fractional cross-sectional area of the bulk substance to produce a first electrical signal correlated to the total weight of the bulk substance including contained moisture, and a de-

tector which is responsive to slow neutrons generated by the interaction of fast neutrons and hydrogen atoms of the contained moisture in said predetermined fractional cross-sectional area to produce a second electrical signal correlated to the weight of the moisture contained in the bulk substance. An electrical circuit divides the moisture weight signal and total weight signal to provide an output correlated to the percent by weight of moisture contained in the bulk material.

An alternative embodiment of the invention is disclosed which is particularly adapted to provide accurate measurements of the weight percentage moisture of bulk substances containing a relatively high degree of moisture and/or other bulk substances, such as iron or sodium chloride, having a relatively large thermal neutron reaction cross-section. This embodiment includes a first detector responsive to gamma radiation which has been transmitted through a predetermined fractional cross-sectional area of the bulk substance to produce a first electrical signal correlated to the total weight of the bulk substance, including contained moisture, and a second detector which responds to fast neutrons transmitted through the bulk substance in the predetermined fractional cross-sectional area to produce a second electrical signal correlated to the weight of the moisture contained in the bulk substance. These signals are then mathematically processed to provide an output correlated to the percentage by weight of moisture contained in the bulk material, which output is highly accurate notwithstanding the fact that the bulk substance has relatively high moisture content and/or contains material having a relatively large thermal neutron reaction cross-section.

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**3,794,844**

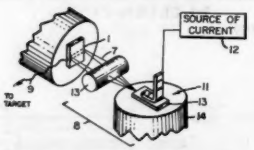
## METHOD AND MEANS OF CONSTRUCTION OF A SEMICONDUCTOR MATERIAL FOR USE IN A LASER

**John O. Dimmock, Acton; Ivars Melngailis, Sudbury, and Alan J. Strauss, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.**

**Division of Ser. No. 90,469, Nov. 17, 1970, Pat. No. 3,748,593, which is a continuation of Ser. No. 635,766, May 3, 1967, abandoned. This application June 25, 1973, Ser. No. 373,055**

**Int. Cl. G01t** *1/24*

**U.S. Cl. 250—370** **11 Claims**




A semiconductor material for use as a lasing medium is made of a solid solution of two materials, said materials being selected so that over some range of composition the solid solution is a semiconductor alloy having a direct band gap which is increased or decreased, depending on the proportion of said materials in the solid solution, there being a certain proportion at which the band gap is zero, at a given temperature and pressure, whereas greater or lesser proportions than said certain proportion results in an increase in the band gap of the semiconductor from said zero band gap.

**3,794,845**

## ELECTRICAL CONTROL SYSTEM

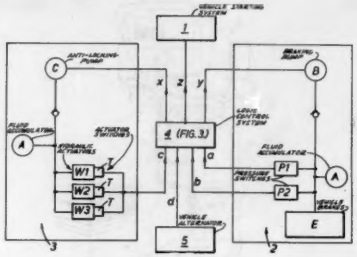
**Henry Jamelson Riddoch, Solihull, England, assignor to Girling Limited, Birmingham, England**

**Filed July 3, 1972, Ser. No. 268,828**

**Claims priority, application Great Britain, July 3, 1971, 31260/71**

**Int. Cl. F02n** *11/08*

**U.S. Cl. 290—38 R** **9 Claims**




An electrical control system which is adapted to control both an electric pump in the hydraulic braking system of a motor vehicle and a control switch in the power supply to the starter motor in a manner dependent on the pressure in the braking system as sensed by a low pressure switch in the pressurised supply side of the pump so that if the pressure sensed by the pressure switch falls below a predetermined minimum level the control switch is operated to prevent energisation of the starter motor and the pump is started. The control system may be further adapted to respond in a manner dependent on operation of the motor vehicle engine and on the pressure as sensed by a second pressure switch is below a predetermined upper level the pump is operated until this upper pressure level is reached at which the second pressure switch operates and stops the pump. This upper pressure level corresponds to a normal acceptable braking force. The control system may be adapted to control the electric pump in an hydraulically powered brake anti-locking system, so as to maintain a predetermined minimum pressure therein. Typically, the control system is, adapted to give priority to the pump of the anti-locking system over the pump of the braking system.

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**3,794,846**

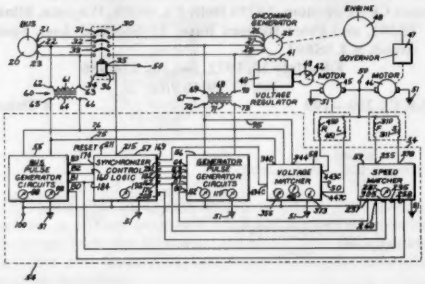
## AUTOMATIC SYNCHRONIZING CONTROL SYSTEM

**David W. Schlicher, and Denton C. Rowe, both of Minneapolis, Minn., assignors to Electric Machinery Mfg. Company, Minneapolis, Minn.**

**Filed Sept. 18, 1972, Ser. No. 289,791**

**Int. Cl. H02j** *3/08*

**U.S. Cl. 307—87** **38 Claims**




An accurate, miniaturized synchronizing system for automatically connecting an oncoming AC generator in parallel

with a three-phase bus source when the generator and bus source output parameters are simultaneously within predetermined phase, frequency and voltage synchronization limits of each other, and for automatically changing the rotational speed and voltage of the oncoming generator to achieve the predetermined synchronizing conditions. Sensing circuits monitor the oncoming generator and bus source output voltages. Pulse generator circuits produce a plurality of phase angle dependent pulse train signals from the sensed output voltage signals. A digital speed matching circuit determines the directional frequency difference between the oncoming generator and bus source signals and provides periodic compensating speed regulating signals to a prime mover of the oncoming generator in response thereto. A voltage matching circuit detects voltage synchronization unbalance between the oncoming generator and bus source output signals, and in response thereto, provides a digital output synchronization signal indicative of the voltage synchronization unbalance, and provides voltage matching control signals to a voltage regulator of the oncoming generator. Phase and frequency synchronizer logic circuits digitally compare the generated pulse train signals and provide therefrom logical phase and frequency synchronization output signals indicative of the phase and frequency unbalance between the oncoming generator and bus source output signals. A synchronizer control logic circuit provides an energizing signal to a circuit breaker for connecting the oncoming generator in parallel with the bus source when the voltage, phase and frequency synchronization output signals simultaneously indicate that the oncoming generator and bus source outputs are within the predetermined synchronization limits. A lockout circuit prevents repeated circuit breaker closure attempts if the circuit breaker fails to close after receiving the first energizing signal from the synchronizer control logic circuit.

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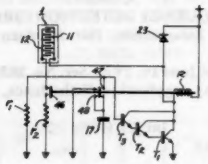
**3,794,847**

## WINDSHIELD WIPER CONTROL MEANS

**Jean Georges Cadiou, St. Cloud, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France**

**Filed June 2, 1972, Ser. No. 259,198**
**Claims priority, application France, June 11, 1971, 71.21251**
**Int. Cl. H01h** *35/00*
**U.S. Cl. 307—117** **11 Claims**



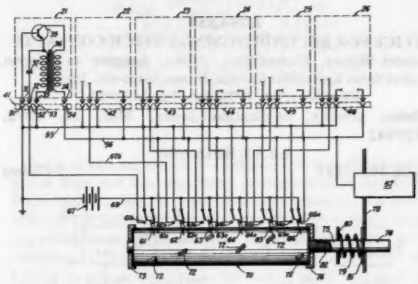
Windshield wiper control comprises a moisture detector in the form of two electrodes separated by a labyrinthine gap and positioned to be wiped by a windshield wiper blade. The motor controlling the wiper is started and stopped by a relay actuated by a control circuit containing the gap between the electrodes so as to start the wiper when the gap is bridged by moisture and stop it when the moisture evaporates. Means are provided for changing the threshold of response after the wiper has been started so that the wiper will stop when there is more moisture on the detector than is required to start it.

**3,794,848**

## LOCKING APPARATUS

**Sherman M. Peters, 30 Meadow Hill Dr., Bristow, Okla. 74010, and Lawrence M. Smith, 297 E. Valley Dr., NE, Marietta, Ga. 30060**

**Filed May 25, 1972, Ser. No. 256,975**
**Int. Cl. E05b** *49/00;* **H01h** *47/20*
**U.S. Cl. 307—129** **2 Claims**



An electronic control actuating system having signal transmitting or injector means and signal receiving means. The signal transmitting means includes a plurality of self-contained oscillator circuits, each oscillator circuit capable of producing an independent radio frequency output signal and wherein the oscillating circuits are adapted to be selectively positioned relative to an actuator means capable of sequentially supplying energy to each of the oscillator circuits for effecting an output of a plurality of sequentially transmitted coded signals. The signal receiving means includes a plurality of self-contained filter circuits, each filter circuit designed for receiving one of the coded radio frequency signals produced by the signal transmitting means, with the signal receiving means including a plurality of sequentially operable switching means, and wherein the filter circuits are adapted to be selectively positioned relative to the sequentially operable switching means for effecting a sequential operation of the switching means to produce an output actuator signal in response to a complete reception of the coded signals produced by the signal transmitting means. Should any signal be received out of sequence, there will be no output signal to the actuator (unlocking-locking unit).

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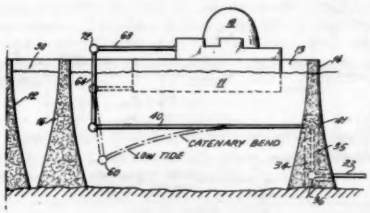
**3,794,849**

## POWER TRANSMISSION SYSTEM FOR CONNECTING FLOATING POWER PLANT TO STATIONARY CONDUCTORS

**Elijah Robert Perry, Scottdale, and Ralph W. Samm, Greensburg, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.**

**Filed Aug. 18, 1972, Ser. No. 281,718**
**Int. Cl. H02g** *3/00*
**U.S. Cl. 307—147** **14 Claims**




A nuclear power plant is mounted on a floating barge stationarily moored within a sea wall, with the barge rising and

falling with the tide. Underwater conductors fixed relative to the sea bed and extending from the shore to the barge are connected to the floating power plant by a freely suspended, horizontal transmission line section, which extends beneath the barge and is always completely submerged. This transmission line section is weighted to have neutral buoyancy, whereby the transmission line section flexes as a catenary as the barge rises and falls with the tide.

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**3,794,850**

## DEVICE FOR RECONDITIONING SWITCH CONTACTS

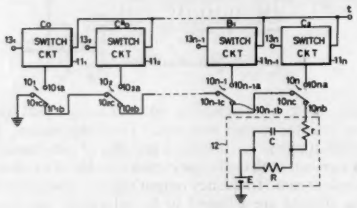
**Yasunori Hirose, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan**

**Filed Mar. 22, 1973, Ser. No. 343,897**

**Claims priority, application Japan, Mar. 24, 1972, 47/029942**

**Int. Cl. H01h** *1/60*

**U.S. Cl. 307—137** **5 Claims**




The so-called "coherer effect" is utilized for reconditioning the touching faces of a movable contact and a fixed break contact of each of several selector switches in a cascade connection. Connected in series in a closed circuit formed by the movable contacts and the fixed break contacts of the selector switches is power supply means such that each time the movable contact of any of the selector switches is returned to the break contact thereof from the corresponding make contact, the insulating oxide films or the like which may have been formed on the touching faces of the contacts are electrically ruptured by a sufficiently high voltage delivered from the power supply means.

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**3,794,851**

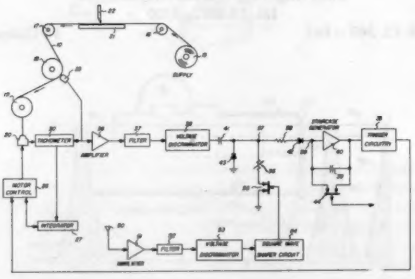
## CIRCUITRY FOR ELIMINATING FALSE TRIGGERING BY TRANSIENT NOISE

**Richard W. Scales, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.**

**Filed May 4, 1973, Ser. No. 357,443**

**Int. Cl. G01r** *33/02*

**U.S. Cl. 307—43** **7 Claims**



A circuit is provided for detecting a defect in the surface of a movable strip of material which, in effect, comprises two channels. The one channel is concerned with detecting an area in which the defect occurs and from the area deriving a series of pulses to ultimately generate a control pulse. The second channel detects any environmental transient noise and introduces the signal generated by such noise into the first channel. If the environmental transient noise is detected by both channels, the pulse and signal so generated are self-cancelling, thereby eliminating any false triggering that might be produced by the noise signal as related to the control pulse.

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**3,794,852**

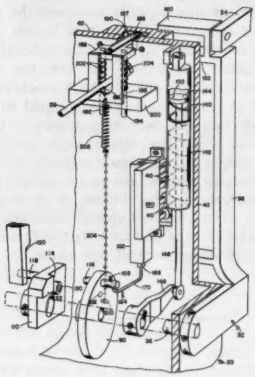
## EMERGENCY SIGNALLING TRANSMITTER WITH IMPROVED LATCH AND LOCK

**John George Willis, Wakefield, Mass., assignor to Solid State Technology, Inc., Wilmington, Mass.**

**Filed Sept. 20, 1972, Ser. No. 290,745**

**Int. Cl. H04b** *1/04*

**U.S. Cl. 325—185** **10 Claims**



Remote electrical signalling system featuring a storage unit which receives mechanical energy from a manually operable member and delivers it to an electro-mechanical generator for the transmitter, a lock assembly for preventing delivery of the stored energy to the generator until the manual operation is complete, and a latch for securing the manually operable member in a position covering the transmitter switches while the storage unit is delivering energy to the generator.

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**3,794,853**

## FREQUENCY DETECTION CIRCUIT

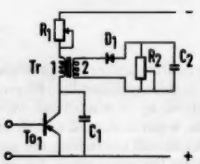
**Salomon Carel Zwarenstein, Piet Heinlaan 16, Oegstgeest, Netherlands**

**Filed June 16, 1972, Ser. No. 263,410**

**Claims priority, application Netherlands, June 18, 1971, 7108412**

**Int. Cl. H03k** *5/20*

**U.S. Cl. 307—233** **10 Claims**




A frequency detection circuit having an input transistor connected to the primary winding of a coupling transformer.

In the secondary winding circuit of the transformer there is connected a diode which cooperates with a parallel arrangement of a resistor and a capacitor arranged so that the current flowing through the resistor depends solely on the frequency of the input signal applied to the input transistor. The frequency detection circuit can simultaneously carry out a number of control functions in response to a corresponding number of frequencies of the input signal.

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**3,794,854**

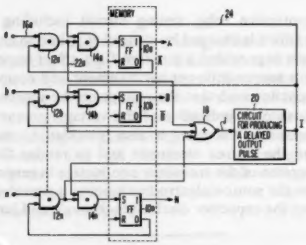
**SIGNAL SENSING AND STORAGE CIRCUIT**

**Richard Eric Hanson, Woburn, and Howard Eisen Fineman, Newton Centre, both of Mass., assignors to RCA Corporation, Princeton, N.J.**

**Filed Nov. 30, 1972, Ser. No. 310,817**

**Int. Cl. H03k** *5/00*

**U.S. Cl. 307—238** **7 Claims**




Circuit for distinguishing signals of relatively long duration (information) on a plurality of input lines from one or more signals of relatively short duration (noise) on these same lines. Any signal present on a line enables a gate for that line which is normally maintained in a primed state by a storage element connected to that line. The enabled gate causes a circuit which is common to all lines to produce a delayed pulse. If, when the delayed pulse occurs, a normally primed gate for a line is still enabled, the storage element of that line is set and the latter disables that gate. If, on the other hand, the normally primed gate is not enabled when the delayed pulse occurs, the storage element is not disturbed and the gate is retained in its primed condition.

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**3,794,855**

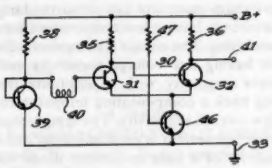
**REGENERATIVE TRANSISTORIZED SWITCH WITH CONSTANT VOLTAGE CIRCUIT**

**Gordon E. Gee, Sarasota, Fla., assignor to Electro Corporation**

**Continuation of Ser. No. 146,175, May 24, 1971, which is a division of Ser. No. 875,983, Nov. 12, 1969, abandoned. This application Mar. 23, 1973, Ser. No. 344,364**

**Int. Cl. H03k** *3/295*

**U.S. Cl. 307—290** **8 Claims**




The switch is incorporated in a magnetic pickup to generate a high level digital signal, improving the signal form and the signal-to-noise ratio. A bistable switch includes input and output stages with a common coupling element having a constant voltage independent of the supply potential, enabling the use of one circuit over a range of operating voltages.

**3,794,856**

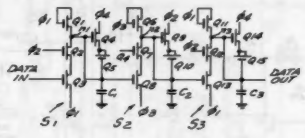
**LOGICAL BOOTSTRAPPING IN SHIFT REGISTERS**

**Lamar T. Baker, West Islip, N.Y., assignor to General Instrument Corporation, Newark, N.J.**

**Filed Nov. 24, 1972, Ser. No. 309,084**

**Int. Cl. H03k** *19/08*

**U.S. Cl. 307—205** **19 Claims**




A novel booster circuit is disclosed which is effective to improve high and low frequency performance of synchronous MOS logic circuits. In a preferred embodiment, the circuit is effective to boost a logic "1" output from a logic stage by capacitively coupling a clock signal thereto just prior to sampling. The coupling capacitor comprises an MOS device having its gate connected to the output node, the clock signal source being selectively connected to the output circuit thereof through a switching device controlled by the level of the output signal. Upon the occurrence of a logic "1" output the gate to channel capacitance of the MOS device serves as a large coupling capacitance to which the clock signal is thereafter applied to boost the logic output prior to sampling by the next logic stage.

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**3,794,857**

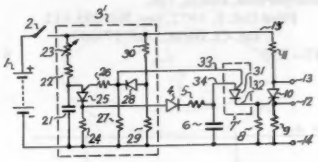
**PULSATING TIMER**

**Slavko Milovancevic, P.O. Box 402, Torrance, Calif. 90508**

**Filed Feb. 7, 1972, Ser. No. 223,852**

**Int. Cl. H03k** *17/28, 17/30, 17/72*

**U.S. Cl. 307—293** **2 Claims**




A pulsating timer consists of two timers — first one produces repeatedly a short pulse at the end of its timing period, the second one produces a pulse at the end of the desired time period. Pulses from the first timer are fed through a diode and a resistor into a storage capacitor. Since the storage capacitor is charged with current pulses at time intervals as first timer dictates, many pulses are needed to charge it sufficiently to trigger a voltage sensing means. Said resistor, storage capacitor, and voltage sensing means form said second timer which will produce its first pulse after a long time interval and in synchronism with said first timer. Both timers are temperature compensated to assure longer and more accurate time intervals.

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**3,794,858**

**OFF DELAY TIMER AND PTC SENSING CIRCUIT**

**David J. Squiers, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.**

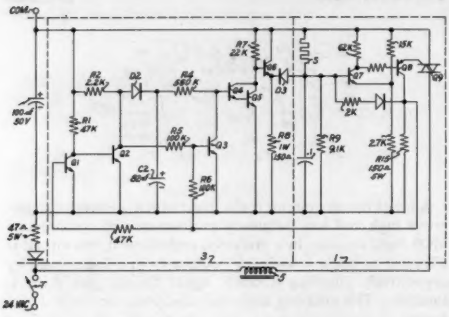
**Filed Dec. 13, 1972, Ser. No. 314,874**

**Int. Cl. H03k** *17/28*

**U.S. Cl. 307—293 R** **5 Claims**

The disclosure relates to a timing circuit for use in conjunction with a protection circuit wherein, under normal opera-

tion, the timing circuit is isolated from the protection circuit. Upon sensing of an alarm condition by the protection circuit, the timing circuit is activated and prevents the protection circuit from again becoming operable and allowing power to be



supplied to the protective device for a predetermined time period as set by the parameters of the timing circuit. This prevents the reapplication of power to the protected device as soon as the alarm condition has been removed.

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**3,794,859**

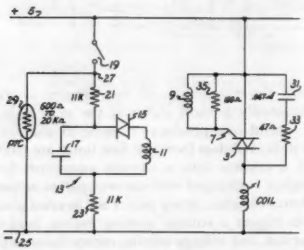
**APPARATUS FOR OBVIATING UNDESIRABLE OPERATION OF AN ELECTRIC CIRCUIT DUE TO FAULTY SWITCHING**

**Francis Finnegan, Wrentham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Oct. 6, 1972, Ser. No. 295,612**

**Int. Cl. H03k** *5/08, 17/00*

**U.S. Cl. 307—238** **6 Claims**



The disclosure relates to a gating circuit which is normally operated by means of an external switching device which supplies the necessary power to the gating circuit. A PTC element is provided in parallel with the gating circuit whereby, in the event that the switch which supplies power to the gating circuit is leaky and presents a high resistance rather than an infinite resistance in its open state, the currents provided to the gating circuit under these conditions will be shunted around the gating circuit through the PTC elements. Under operation where the switch is closed, the PTC elements will rapidly change to high resistance elements and thereby effectively remove themselves from the circuit.

**3,794,860**

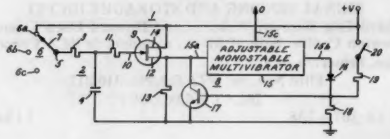
**LONG-TIME DELAY CIRCUIT EMPLOYING HIGH-IMPEDANCE LEVEL DETECTOR**

**William C. Kotheimer, Lansdowne, Pa., assignor to General Electric Company, Philadelphia, Pa.**

**Filed Sept. 28, 1972, Ser. No. 293,149**

**Int. Cl. H03k** *3/26*

**U.S. Cl. 307—272** **7 Claims**




In a protective relay timing circuit including a timing capacitor which is charged by a signal supplied to an input terminal, there is provided a junction-field effect transistor connected in a source-follower arrangement and coupled to the timing capacitor such that the voltage on the source electrode of the transistor is indicative of the voltage appearing on the timing capacitor. Circuitry is also provided to monitor the voltage on the source electrode and to render the gate-to-source junction of the transistor conductive in response to the voltage on the source electrode attaining a preselected level, whereupon the capacitor discharges through said junction.

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**3,794,861**

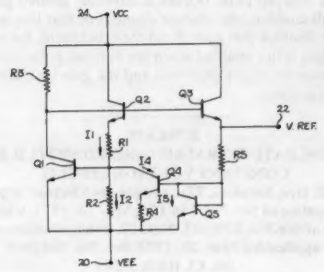
**REFERENCE VOLTAGE GENERATOR CIRCUIT**

**Jerald Roy Bernacchi, Los Altos, Calif., assignor to Advanced Memory Systems, Inc., Sunnyvale, Calif.**

**Filed Jan. 28, 1972, Ser. No. 221,731**

**Int. Cl. H03k** *1/12*

**U.S. Cl. 307—297** **11 Claims**



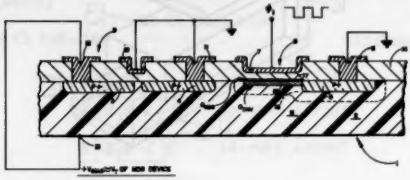

A reference voltage generator circuit particularly suited for current source circuits having low temperature sensitivity and low voltage sensitivity. The circuit is comprised of a reference voltage circuit having low voltage sensitivity and relatively high temperature sensitivity, with an additional feedback circuit for feeding back a compensating temperature sensitivity to result in a low overall sensitivity. The temperature sensitivity of the reference generator is predominately due to the temperature sensitivity of a base to emitter diode voltage drop which may be selectively controlled or substantially cancelled by the proper selection of resistors in the feedback circuit so as to feed back a temperature sensitive component. The feedback signal is dependent upon the difference in the base to emitter voltage drops in two transistors conducting different magnitudes of current, and is similarly amplified so as to effectively allow cancellation of the basic reference generator sensitivity.

3,794,862

## SUBSTRATE BIAS CIRCUIT

Frederick B. Jenne, Huntington Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 5, 1972, Ser. No. 241,171
Int. Cl. H01l 19/00
U.S. Cl. 307—304 5 Claims



A semiconductor substrate including a field effect charge pump for injecting charge into the substrate and a field effect transistor circuit, connected between the substrate and a reference voltage source, responsive to the level of substrate charge for clamping the substrate bias voltage at a desired level. By controlling the gate voltage applied to the field effect transistor circuit and the number and arrangement of transistors in the circuit, the substrate bias voltage can be clamped at a value greater than, equal to, or less than the transistor threshold voltage.

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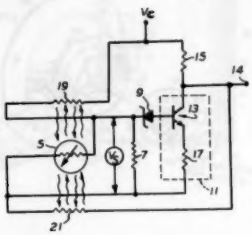
3,794,863

## TURN SIGNAL INDICATOR SWITCHING CIRCUIT

L. Frank Emerson, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Continuation-in-part of Ser. No. 265,616, June 23, 1972, abandoned. This application June 6, 1973, Ser. No. 367,517
Int. Cl. H03k 17/60; G05f 3/10
U.S. Cl. 307—310 8 Claims




A turn signal switching circuit includes a thermistor coupled to a potential source by first and second heating means and shunted by a first load circuit with a second load circuit coupled to the first load circuit by a switching means and shunting the second heating means.

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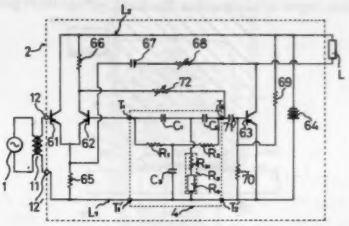
3,794,864

## GALVANO-MAGNETO EFFECT APPARATUS

Noboru Masuda, Kawaguchi, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed June 13, 1972, Ser. No. 262,182
Claims priority, application Japan, Dec. 9, 1967, 42-78930
Int. Cl. H01v 5/00
U.S. Cl. 307—309 7 Claims

A galvano-magneto effect apparatus in which a parallel T circuit consisting of resistors and capacitors is employed as the positive feedback circuit of an active element. A magnetism sensing element the resistance of which varies with the intensity of a magnetic field applied is employed as the resistance component, and an AC signal is supplied from the AC signal generating source to the input side of said active element. The




center frequency of said parallel T circuit is varied in reference to the frequency of said AC signal by varying the intensity of said magnetic field, and the output to be supplied to a load is increased or decreased by varying said center frequency.

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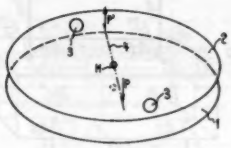
3,794,865

## DEVICE FOR PRODUCING A ROTATING MOVEMENT BY MEANS OF AT LEAST ONE PULSATING DRIVING FORCE

Kurt Guttinger, Murten, Switzerland, assignor to Saia A.G., Fabrik elektrischer Apparate, Fribourg, Switzerland

Filed July 10, 1972, Ser. No. 270,169
Claims priority, application Germany, July 17, 1971, 2135929
Int. Cl. H02k 7/10, 7/06
U.S. Cl. 310—82 18 Claims




A device for producing a rotating movement by means of at least one pulsating or alternating driving force acting on a displaceable element such as a tumbler disc or wobble disc for imparting to this element a motion such that a track of this element rolls along a track of another element, a slow differential rotating movement between such elements being thereby produced due to a difference in length of the tracks on the elements. The tracks may be toothed rims meshing with each other. The device is particularly usefull in synchronous motors, wherein the pulsating driving force is produced by means of an exciting coil connected to an alternating current source.

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3,794,866

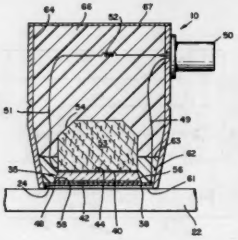
## ULTRASONIC SEARCH UNIT CONSTRUCTION

Jerry T. McElroy, and Gerald J. Posakony, both of Boulder, Colo., assignors to Automation Industries, Inc., Los Angeles, Calif.

Filed Nov. 9, 1972, Ser. No. 305,119
Int. Cl. H04r 17/00
U.S. Cl. 310—8.2 10 Claims

An ultrasonic nondestructuve testing system and a search unit are disclosed herein. The search unit includes a transducer crystal for transmitting and receiving ultrasonic energy

together with an acoustical backing structure which is disposed on the backside of the transducer crystal for dampening spurious ultrasonic energy radiated from its back-side. The backing structure includes compacted or pressed fibers of a dense, non-resonant material.



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**3,794,867**

**FIXING DEVICE FOR AN OSCILLATORY CRYSTAL**

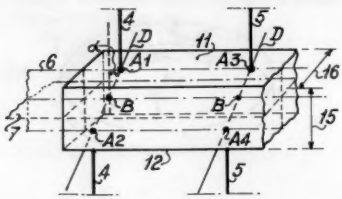
**Guy Gibert, and Pierre Vidal, both of Sartrouville, France, assignors to Compagnie D'Electronique Et De Piezo-Electricite-C.E.P.E., Paris, France**

**Filed Feb. 9, 1972, Ser. No. 224,879**

**Claims priority, application France, Feb. 19, 1971, 71.05751**

**Int. Cl. H01v** *7/00*

**U.S. Cl. 310—9.1** **4 Claims**



A wire suspension device for oscillatory piezoelectric crystals made of a bar vibrating in a flexion mode, said wires being fixed on two parallel faces at points of minimum vibration of the crystal , determined by the intersection with these faces of a particular inclined straight line passing through a point of the median axis of longitudinal symmetry located at a distance from one end of approximately 0.2 times the total length.

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**3,794,868**

**ELECTROMAGNETIC DEVICE**

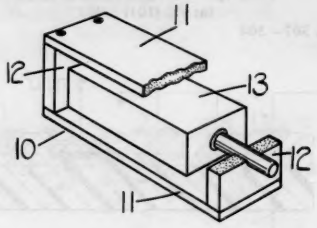
**Richard Wolliscroft Haigh, Harborough Bank, Shelsley Beauchamp, near Worcester, England**

**Filed Aug. 31, 1971, Ser. No. 176,526**

**Int. Cl. H02k** *33/00*

**U.S. Cl. 310—36** **10 Claims**

An electro-magnetic torque motor has a permanent magnet pivotally mounted in a hollow frame of magnetisable material. Surrounding the magnet within the frame is a winding whose magnetic axis is angularly displaced from the magnetic axis of the magnet when the winding is not energised. Energisation of the winding tends to rotate the magnet within the winding in a direction to align the magnetic axes.



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**3,794,869**

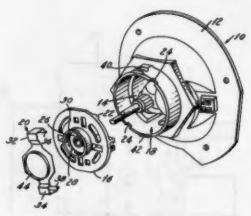
**DYNAMOELECTRIC MACHINE END PLATE AND MOUNTING MEANS**

**Theodore G. Apostoleris, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.**

**Filed Nov. 15, 1972, Ser. No. 306,778**

**Int. Cl. H02k** *5/16*

**U.S. Cl. 310—90** **8 Claims**



A bearing retaining unitary plastic end plate for a dynamoelectric machine is disclosed. The end plate includes a through passage for receipt of the normally provided armature bearing and armature bearing retaining means. In order to accommodate placement of the dynamoelectric machine so that the axis of rotation of the armature may be at or near the vertical, the through passage is provided with a discontinuous ridge for receipt of resilient fingers extending from the bearing retaining means. This ridge is formed by providing a plurality of passages extending part-way through the end plate structure parallel to the axis of the through passage and intersecting the through passage in the vicinity of bearing retaining means. The end plate structure is also formed with a pair of molded, opposed wire retaining clip members for receiving any internal wiring and preventing that wiring from entering the brush/commutator interface. A resilient clip means is provided for mounting the end plate structure on the housing of the dynamoelectric machine while providing central support for the end plate.

3,794,870

## THREE-PHASE, POLE-CHANGING MOTOR

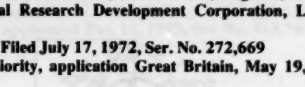
Alexander Richard William Broadway; William Fong, and Gordon Hindle Rawcliffe, all of Bristol, England, assignors to National Research Development Corporation, London, England

Filed July 17, 1972, Ser. No. 272,669

Claims priority, application Great Britain, May 19, 1972, 23,667/72

Int. Cl. H02k 3/00

U.S. Cl. 310—180 13 Claims




A three-phase, alternating current, speed-changing electric motor, or generator, suitable for six-terminal, series/parallel switching and with pole-changing effected by pole-amplitide modulation, having a composite three-phase stator winding comprising two component windings with corresponding phase-winding parts connected in the same phase of the composite winding and spaced apart from each other around the winding periphery. Most commonly the spacing is uniform.

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3,794,871

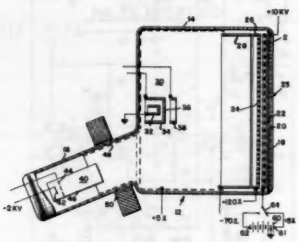
## OPERATIONALLY RUGGED DIRECT VIEW STORAGE TUBE

Nobuo J. Koda, Vista, and John S. Ebert, Oceanside, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 14, 1972, Ser. No. 289,047

Int. Cl. H01j 31/48

U.S. Cl. 313—68 R 4 Claims



The present invention relates to an improved direct view storage tube having a non-storage mode of operation and incorporating an operationally rugged storage target with greatly improved retained image characteristics. This is generally achieved by using an overlay on the storage target having less resistance, a lower secondary emission ratio and a greatly enhanced bombardment induced conductivity effect compared to the characteristics of the storage target dielectric.

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3,794,872

## MOVING TARGET SPRING LOADED X-RAY TUBE

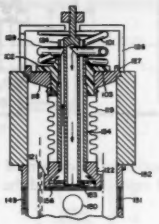
David J. Haas, 112 Three Lakes Dr., Stamford, Conn. 06902, and Jerome Pichert, Idle Day Dr., Centerport, N.Y. 11721

Continuation-in-part of Ser. No. 138,627, April 29, 1971. This application June 21, 1972, Ser. No. 264,805

Int. Cl. H01j 35/10

U.S. Cl. 313—60 10 Claims

A sealed-off X-ray tube having a flat target surface facing an electron beam source and carried by a rigid support mounted for sliding reciprocally lateral motion against a sliding surface. A bellows is sealed vacuum tight to the target and to the wall of the tube opposite the sliding surface so that the target, the bellows, and the envelope of the tube form a closed surface. Conduits extend through the sliding surface to direct the flow of cooling fluid against the back surface of the target and carry



the fluid away. The axis of the target reciprocates laterally in a direction perpendicular to the axis of the tube but the target does not rotate on its own axis. The target may be moved manually or by motor and with a linear, or circular motion. Because of the movement of the target, virtually constant X-ray beams radiate through windows of the tube and the effective life of the target is substantially increased.

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3,794,873

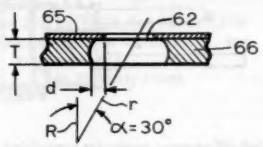
## INTERCHANGEABLE SHADOW MASK

Sam H. Kaplan, and Raymond M. Stachniak, both of Chicago, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 290,693, Sept. 20, 1972, abandoned. This application Nov. 6, 1972, Ser. No. 304,171

Int. Cl. H01j 29/06, 1/52

U.S. Cl. 313—85 S 2 Claims




A color television picture tube including an interchangeable multilayer shadow mask having a thin aperture-defining layer of a first material and a thick supporting layer of a second material. The mask is preformed while imperforate into its final curved configuration and the aperture pattern formed by photo-exposure and selective etching. The holes in the supporting layer are larger than the corresponding apertures in the aperture-defining layer to establish an increasing undercut graded in accordance with distance from the geometric center of the tube.

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3,794,874

## IMAGE TRANSFORMER TUBE WITH MOVABLE PHOSPHOR SCREEN

Hendrik Mulder, and Johannes Jacobus Houtkamp, both of Delft, Netherlands, assignors to N.V. Optische Industrie "De Ouda Delft", Delft, Netherlands

Filed Jan. 26, 1972, Ser. No. 220,745

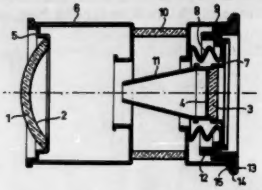
Claims priority, application Netherlands, Feb. 8, 1971, 7101610

Int. Cl. H01j 39/10, 39/14

U.S. Cl. 313—102 1 Claim

In an diode image amplifier or image transformer tube a

part of the wall of the tube between the anode and cathode window is composed of one or more interconnected metal



rings which can elastically be deformed to vary the distance between anode and cathode to avoid the use of a third focusing electrode.

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**3,794,875**

**NEUTRON GENERATORS**

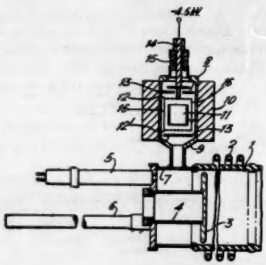
**Donald Sutherland Stark, Baldock, England, assignor to Nationale Research Development Corporation, London, England**

**Filed Dec. 18, 1970, Ser. No. 99,331**

**Claims priority, application Great Britain, Dec. 30, 1969, 62570/69**

**Int. Cl. H01j *39/00***

**U.S. Cl. 331—61 S** **8 Claims**



In a sealed-off neutron generator containing tritium, for the production of neutrons by the D-T reaction, helium-3 gas accumulates owing to radioactive decay of the tritium and interferes with the proper operation of the generator. In the present generator a sputter-ion pump is sealed to the generator to remove the helium-3 from the envelope prior to admitting hydrogen isotope gas from the usual replenisher before use. The pump is adapted to remove only the unwanted helium-3 and not the wanted D and T, by having its sputterable cathodes made of, or coated with, a metal which has a low chemical affinity for hydrogen but is readily sputtered by helium, such as copper.

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**3,794,876**

**DEFLECTION CIRCUIT FOR AN ELECTRON BEAM IN A CATHODE-RAY TUBE**

**Willem Meijndert Van Alphen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

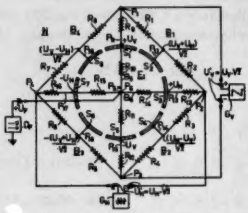
**Filed Aug. 30, 1972, Ser. No. 284,966**

**Claims priority, application Netherlands, Sept. 4, 1971, 7112210**

**Int. Cl. H01j *29/70***

**U.S. Cl. 315—17** **7 Claims**

A deflection circuit for an electron beam formed with an electrode system suitable for both focussing and deflection, which system includes an electrode dividend in segments. The electrode segments are incorporated in a bridge circuit built up from resistors while two deflection signal generators are



each connected to two bridge connection points. A focussing voltage source is connected to a central connection point of a bridge cross branch so that the source and the generators are mutually decoupled.

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**3,794,877**

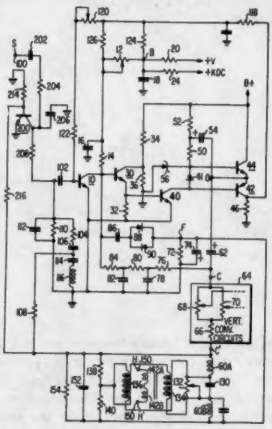
**JITTER IMMUNE TRANSISTORIZED VERTICAL DEFLECTION CIRCUIT**

**Lawrence Edward Smith, and David Lynn Neal, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.**

**Filed Mar. 30, 1972, Ser. No. 239,483**

**Int. Cl. H01j *29/70***

**U.S. Cl. 315—27 TD** **6 Claims**



U.S. Pat. No. 3,684,920 issued on Aug. 15, 1972 and based on U.S. Patent Application Serial No. 37,668, filed May 15, 1970, describes a transistor deflection circuit employing an output stage of class B, push-pull complementary symmetry type and a Miller integrator approach for the sawtooth wave generation. This invention describes a modification to the discharge circuitry thereof to improve the vertical deflection stability in the presence of spurious pulses which tend to undesirably and randomly trigger and/or retrigger the discharge switch. An additional "blanker" transistor is employed to sense the voltage across the vertical yoke winding so as to bypass the spurious signals away from the discharge switch during the vertical retrace interval when the danger exists that the deflection circuits will be falsely triggered.

3,794,878

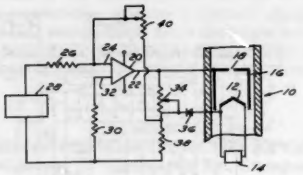
## ELECTRON BEAM REGULATOR

Edward N. Sickafus, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 61,156, Aug. 5, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,701

Int. Cl. H01j 29/52

U.S. Cl. 315—30 5 Claims




A resistor connected between the filament and a filament can of an electron beam device also is connected to an auxiliary operational amplifier that establishes and controls an auxiliary current through the resistor. The operational amplifier can be connected to maintain a constant current through the resistor or a constant potential difference across the resistor despite wide variations in the potential of the filament power supply, the electron producing ability of the filament, or other operational disturbances. In addition, the operational amplifier can be programmed to produce predetermined variations in the quantity of electrons making up the electron beam with a much wider band width.

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3,794,879

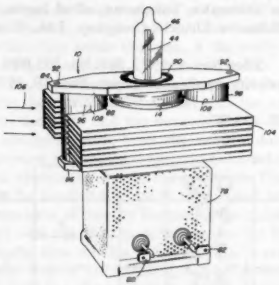
## MICROWAVE MAGNETRON

Robert E. Edwards, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 24, 1972, Ser. No. 300,066

Int. Cl. H01j 25/50

U.S. Cl. 315—39.71 2 Claims



A crossed field electromagnetic energy device of the magnetron type is provided with integral magnetic field producing means including permanently magnetized members of a ferromagnetic material diametrically disposed adjacent to opposing sides of the anode member sidewalls together with spaced return path members. The magnetic field leakage flux is reduced by tapering the return path member walls to as close as possible to the magnet member outline. Energy leakage is controlled by eliminating axial clearance passageways for the cathode assembly found in prior art axially mounted magnet packages. A circulating fluid medium is directed between cooling fins which partially surround each magnet member and are appended to the anode member walls to control magnet material temperatures during operation and improve magnetic field efficiencies. A lighter weight device which is simple to assemble results with lower manufacturing costs as well as reduced shipping and handling costs.

3,794,880

## ELECTRIC INCANDESCENT LAMP FOR SERIAL CONNECTION, PROVIDED WITH A SHORT-CIRCUIT MECHANISM ACTING AS A FUSE AT THE SAME TIME

Enrico Peretti, Turin, and Piet Kramer, Alpignano, both of Italy, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 20, 1972, Ser. No. 264,493

Claims priority, application Netherlands, June 21, 1971, 7108537

Int. Cl. H01j 29/96

U.S. Cl. 315—47 4 Claims

Electric incandescent lamp for serial connection, provided with a short-circuit mechanism consisting of a wirepiece wound about the current conductors. This wirepiece consists of an alloy of nickel and copper. The current conductors and/or the metal wire are provided with an oxide film.

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3,794,881

## SUPPLY CIRCUIT FOR A GAS DISCHARGE CHARACTER DISPLAY TUBE

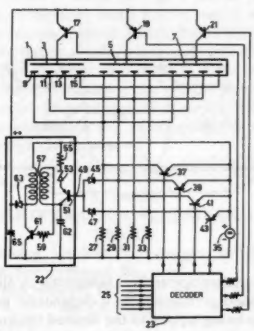
Daniel Johannes Gerardus Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 13, 1972, Ser. No. 217,593

Claims priority, application Netherlands, Jan. 29, 1971, 7101186

Int. Cl. H01j 17/48

U.S. Cl. 315—84.6 10 Claims



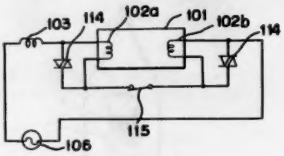

A supply circuit for a gas discharge character segment display tube in which the cathode circuit of one or more cathodes luminescing upon the display of each character includes a measuring resistor from which a control voltage is derived for a supply voltage control.

3,794,882

## FLUORESCENT LIGHTING APPARATUS

Tatsushi Kitanosono, 652 Tsutsumikata machi, Ohta-ku, Tokyo, Japan

Division of Ser. No. 119,613, March 1, 1971, which is a continuation of Ser. No. 735,823, June 10, 1968, abandoned. This application July 10, 1972, Ser. No. 270,206
Claims priority, application Japan, June 12, 1967, 42-50067
Int. Cl. H05b 39/04
U.S. Cl. 315—100 2 Claims



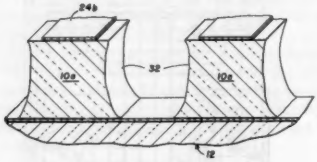

The invention relates to an apparatus for identification of a concealed sign, such as a signature, on a card or the like and comprises a fluorescent member, a light source for stimulating the fluorescent member, a retaining member for holding the card carrying the concealed sign during the identification process and an infrared ray source. The apparatus of this invention may further include an optical system for directly comparing the visualize image of the concealed sign with a second sign and an instantly lighting circuit for the light source.

3,794,883

## PROCESS FOR FABRICATING GE:HG INFRARED DETECTOR ARRAYS AND RESULTING ARTICLE OF MANUFACTURE

Ernest G. Bylander, Ervay, Dallas, Tex. 75201, and Hall E. Jarman, 555 Brookhurst, Dallas, Tex. 75218

Continuation of Ser. No. 32,490, April 13, 1970, abandoned. This application Feb. 1, 1973, Ser. No. 328,552
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R 8 Claims



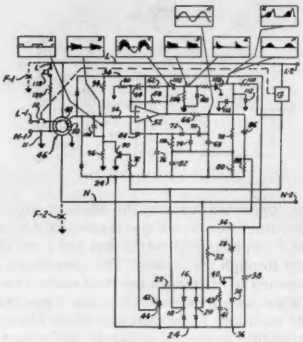

An infrared detector array is fabricated by alloying a slice of mercury doped germanium to a degenerate germanium substrate. After being lapped to the desired thickness, the slice is etched through to the substrate to form individual detector bars using a metal mask which is then partially removed to form a gold contact strip on each bar. Output conductors are formed by patterning copper films thermocompression bonded to high temperature plastics, gold plating the conductors, and connecting the gold plated conductors to the gold contact strips by gold jumper wires thermocompression bonded to the conductors and to the contact strips.

3,794,884

## GROUND FAULT INTERRUPTER WITH PULSED NEUTRAL-TO-GROUND FAULT DETECTOR

Richard C. Sircom, Scarborough, Ontario, Canada, assignor to Federal Pacific Electric Company, Newark, N.J.

Continuation-in-part of Ser. No. 320,855, Jan. 4, 1973. This application May 29, 1973, Ser. No. 364,890
Int. Cl. H02h
U.S. Cl. 317—18 D 7 Claims



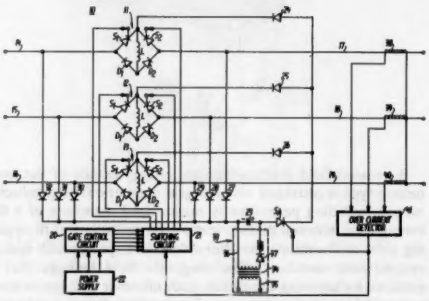
Apparatus for monitoring an alternating-current circuit having a differential current transformer to sense line-to-ground faults includes a pulsed ringing circuit for evidencing freedom of the alternating-current circuit from neutral-to-ground faults that could reduce the sensitivity of the line-to-ground fault detector.

3,794,885

## STATIC TYPE ELECTRIC CIRCUIT BREAKER

Heiji Kishi, Tokyo; Katshuiko Takigami, Kawasaki, and Yoshihiro Shirasaka, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Nov. 9, 1972, Ser. No. 305,080
Claims priority, application Japan, Nov. 10, 1971, 46/89066
Int. Cl. H02h 7/20
U.S. Cl. 317—33 SC 8 Claims




A single-phase full-wave type rectifier bridge is respectively provided within selected phases of A.C. line conductors and in series therewith to provide for the switching of an A.C. load current. Each rectifier bridge has four arms two of which respectively include a main thyristor and the other two arms of which respectively include a main diode. Additionally, the rectifier bridge functions such that one of the main thyristors passes a positive half wave of current therethrough, the other

main thyristor passes a negative half wave of current therethrough, one of the main diodes becomes conductive during a positive half wave of the current and the other of the main diodes becomes conductive during a negative half wave of the current. A reactor is connected across the D.C. output terminals of the rectifier bridge for conduction of the load current. A series combination of a commutating capacitor and an auxiliary thyristor is connected between an intermediate connection point of the main thyristors of the rectifier bridge and other terminals of the main thyristors through an auxiliary diode. The commutating capacitor is normally charged from an auxiliary D.C. voltage supply and is discharged to negatively bias the main thyristor which is conductive when the auxiliary thyristor is turned on when a circuit-interruption is required.

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**3,794,886**

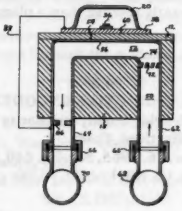
## FLUID COOLED SEMICONDUCTOR SOCKET

**Wayne E. Goldman, 33 Turning Mill Rd., Lexington, Mass. 02173**

**Continuation of Ser. No. 104,702, Jan. 7, 1971, abandoned. This application June 26, 1972, Ser. No. 266,326**

**Int. Cl. H05k** *7/20;* **H02b** *1/04*

**U.S. Cl. 317—100** **10 Claims**



A fluid cooled semiconductor socket comprising a thermally conductive plate adapted to hold the semiconductor in good thermal contact with the plate at a point of the semiconductor case having a hgh thermal conductivity with the semiconductor chip inside the case. A thermally conductive fluid conduit is attached to the plate on a face directly opposite from the semiconductor. The conduit is placed so as to maximize the thermal conductivity between the point where it is placed on the plate and the semiconductor chip, but still allow the electrical leads from the semiconductor to pass through the plate and establish electrical contact on the other side without obstruction by the fluid conduit. The fluid flowing through the conduit is made to absorb and conduct away increased amounts of heat by narrowing the conduit where it is in contact with the plate so as to increase the fluid velocity and reduce the slow moving fluid boundary layer in contact with an inner wall of the conduit, and by promoting turbulence in the field flow through ths narrowed portion. The plate and conduit are imbedded in a plastic housing which is keyed to lock into a multi-socket strip which orientates the conduit ends for mating with electrical leads and with manifolds conveying the cooling fluid.

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**3,794,887**

## MOUNTING ARRANGEMENTS FOR PRINTED CIRCUIT BOARDS

**David John Brennan, and Loraine Leonard Williams, both of Solihull, England, assignors to Lucas Aerospace Limited, Birmingham, England**

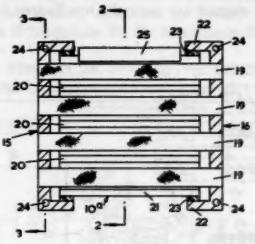
**Filed Nov. 15, 1972, Ser. No. 306,818**

**Claims priority, application Great Britain, Nov. 17, 1971, 53,273/71**

**Int. Cl. H02b** *1/02*

**U.S. Cl. 317—101 DH** **11 Claims**

A printed circuit board arrangement includes a frame and a plurality of flexible metal webs secured to the frame by their ends. A printed circuit board is secured to the webs so that each web has a free length between said frames and an adjacent edge of the board.



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**3,794,888**

## REMOTE CONTROL SWITCH CIRCUIT

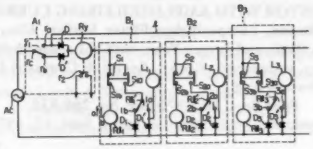
**Tsuyoshi Hisano, Tsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan**

**Filed Sept. 27, 1972, Ser. No. 292,604**

**Claims priority, application Japan, Oct. 1, 1971, 46-76887**

**Int. Cl. H01h** *47/22;*

**U.S. Cl. 317—150** **2 Claims**



A remote control switch circuit for switching on and off an associated load with a remote control relay operated by one of a plurality of remote control switches which is actuated independently of others. The circuit comprises a series circuit of a remote load section including the remote control relay connected to the load and normally closed and normally opened contacts connected in series through a pair of reversely connected diodes to the relay and a first operating switch section including the remote control switch for initiating and interrupting current fed to a polar relay and normally closed and normally opened contacts connected in series through a pair of reversly connected diodes to the switch, and an AC source providing source voltage to said series circuit. Other operating switch section or sections will be connected to said first section in parallel relation thereto.

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**3,794,889**

## OPEN AIR GAP OPERATION WITH STATIC OVERLOAD DEVICE

**Challiss I. Clausing, Marlton, N.J., assignor to I-T-E- Imperial Corporation, Spring House, Pa.**

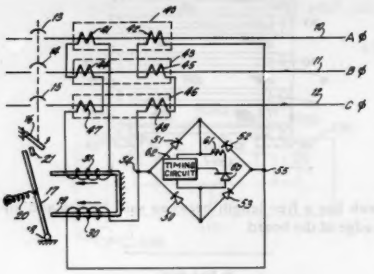
**Filed June 18, 1973, Ser. No. 370,766**

**Int. Cl. H02h** *3/28*

**U.S. Cl. 317—27 R** **9 Claims**

A tripping unit for a circuit breaker is energized by a current transformer which has two identical winding for each phase of the power circuit being protected. One set of windings is connected to one winding of an overload magnet, and the second set of windings is connected to a second and identical winding on the magnet. The second set of windings is further connected to the a-c terminals of a single phase, full

wave bridge which has its d-c terminals connected to a switching device which is operable by a timing circuit. The armature of the magnet is spring loaded to a normally open position and the opposing fluxes produced in the two identical windings of the magnet are normally insufficient to close the




armature to trip a circuit breaker. However, when a fault current is created, the timing circuits eventually fire the switching device in the full wave bridge to short-circuit the second winding on the overload magnet to permit the other winding to produce a sufficiently strong magnetic field to close the armature and trip the circuit breaker.

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3,794,890

## THYRISTOR WITH AMPLIFIED FIRING CURRENT

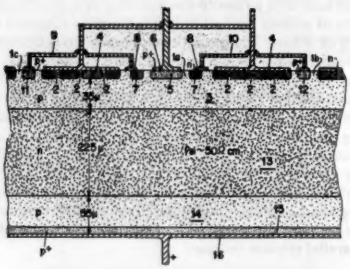
**Klaus Weimann, Lampertheim; Elmar Muller, Alzey; Heinz Joachim Baab, and Jurgen Pape, both of Lampertheim, all of Germany, assignors to Brown, Boveri & Company Limited, Baden, Switzerland**

**Filed Sept. 14, 1972, Ser. No. 288,932**

**Claims priority, application Germany, Sept. 15, 1971, P 21 46 178.9**

**Int. Cl. H01l** *15/00, 11/00*

**U.S. Cl. 317—235 R** **4 Claims**



A thyristor structure includes an outer emitter layer of one conductivity type provided with a main electrode and an underlying base layer of opposite conductivity. The emitter layer is provided with a central opening through which small-area contact is made to the base layer to establish a firing current, and surrounding the small-area contact is an annular zone also located within the opening and which exhibits the same type of conductivity as the emitter layer. One or more additional openings are provided in the emitter layer laterally outward of the annular zone and through which small-area contact(s) serving to establish auxiliary firing current is(are) made to the base layer, and the annular zone and said additional small-area contact(s) are linked to each other by way of a conductor without an intermediate barrier layer.

3,794,891

## HIGH SPEED RESPONSE PHOTOTRANSISTOR AND METHOD OF MAKING THE SAME

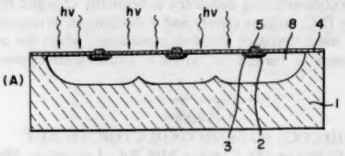
**Saburo Takamiya, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan**

**Filed Mar. 5, 1973, Ser. No. 338,252**

**Claims priority, application Japan, Mar. 3, 1972, 47/22008**

**Int. Cl. H01l** *15/00*

**U.S. Cl. 317—235 R** **7 Claims**




A high speed response phototransistor comprises a plurality of pairs of base layers and emitter layers formed with progressive diffusions on a common collector, and an emitter electrode which commonly connects the plurality of emitter layers. The width of a depletion layer between the base and emitter layers is broadened so that a narrow base-emitter layer whose area is significantly smaller than a planar spread of the depletion layer.

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3,794,892

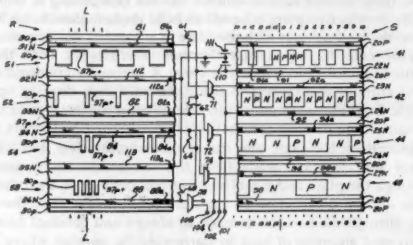
## SEMICONDUCTIVE ENCODER

**Frank S. Preston, Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**

**Filed Mar. 16, 1965, Ser. No. 440,154**

**Int. Cl. H01l** *11/00, 15/00*

**U.S. Cl. 317—235 R** **38 Claims**



A semiconductive encoder comprises a rotor having field-effect transistors the insulated gates of which are mounted on a stator. The stator comprises a backwardly biased p-n pattern which creates dielectric fields for the rotor transistors. Relative movement between rotor and stator varies the current through the insulated-gate field-effect transistors to provide a digital indication of the relative position of rotor and stator.

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3,794,893

## D. C. MOTOR AND POWER SUPPLY THEREFOR

**Ronald G. Arpino, Branford, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.**

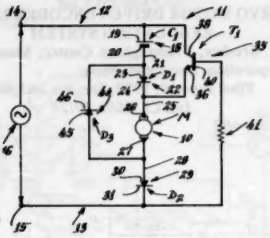
**Filed Mar. 12, 1973, Ser. No. 340,565**

**Int. Cl. H02m** *7/04*

**U.S. Cl. 318—138** **8 Claims**

A network including a D.C. motor and a transformerless voltage reducing power supply for driving the motor. The network includes a series circuit branch adapted to be connected

across a source of supply of A.C. power. The series circuit branch includes the motor, a capacitor and two rectifying devices, connected in series with one another. The rectifying devices are connected in the same conductive direction. During alternate half cycles of source output voltage the source charges the capacitor in series with the motor to operate the



motor. The network also includes means for switching the charged capacitor into a closed loop during the other half cycles of source output voltage. The closed loop includes the charged capacitor, motor and a third rectifying device. Since the charged capacitor is thereby connected in parallel with the motor, it discharges through the motor to operate the same.

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**3,794,894**

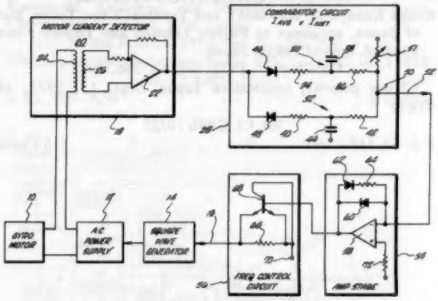
## GYRO HUNT DAMPING CIRCUIT

**Roger Van Leer, Woodland, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.**

**Filed Mar. 24, 1972, Ser. No. 237,743**

**Int. Cl. H02p** *5/28*

**U.S. Cl. 318—184** **15 Claims**



A gyro hunt damping circuit for electrically changing the phase of the excitation current applied to a synchronous motor to slowly settle changes in the lag angle of a synchronous motor and thereby dampen motor hunting, is disclosed. The current drawn by a synchronous motor is continually sensed by a current detector circuit which provides an output signal representative of the motor current. The detector output signal is applied to a comparator circuit which serves to compare average current drawn by the motor over a long time period to instantaneous current demand over short time periods. The frequency of a square wave generator, which controls the frequency of excitation current from the AC power supply of the motor, is temporarily changed in accordance with any difference between the average and instantaneous motor current demand.

**3,794,895**

## ELECTRIC MOTORS WITH ELECTRONIC COMMUTATION

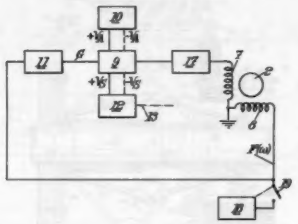
**Claude Coupin, Argenteuil, and Alain Deval, Fontenay-le-Fleury, both of France, assignors to Societe D'Applications Generales D'Electricite Et De Mecanique SAGEM, Paris, France**

**Filed Oct. 28, 1971, Ser. No. 193,293**

**Claims priority, application France, Nov. 5, 1970, 7039856**

**Int. Cl. H02k** *29/00*

**U.S. Cl. 318—254** **9 Claims**



The motors are supplied by DC current and comprise two coils wound at 90° on a stator, the motor coil being supplied by a power amplifier, whilst the detector coil delivers a detector signal introduced into a dephaser. The motors are particularly useful for driving inertia wheel equipment, especially gyroscopes.

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**3,794,896**

## CONTROL CIRCUIT FOR COOLING FANS

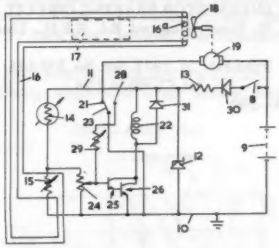
**William David Holt, Colne, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England**

**Filed Dec. 29, 1972, Ser. No. 319,795**

**Claims priority, application Great Britain, Dec. 1, 1972, 1,380/72**

**Int. Cl. G05d** *23/30*

**U.S. Cl. 318—471** **1 Claim**



A control circuit for an electrically driven cooling fan has a relay for switching the fan in and out. Associated with the relay is resistance means for reducing the differential between the on and off points of the fan.

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**3,794,897**

## ELECTRIC RAILWAY SPEED CONTROL

**Robert Auldom Bradley, 18 Ralston Ave., Toronto 13, Ontario, Canada**

**Filed Nov. 24, 1972, Ser. No. 309,061**

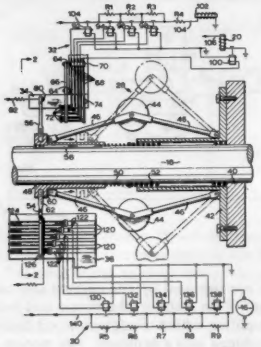
**Claims priority, application Canada, Feb. 10, 1972, 134456**

**Int. Cl. H02p** *1/20, 3/14*

**U.S. Cl. 318—270** **6 Claims**

Regenerative braking systems which have previously been used in association with electrically driven vehicles have been

manually controlled whereas the present invention provides a governor which automatically controls the starting resistance of the series winding of the motor and the regenerative braking resistance of the motor in proportion to the speed of the vehicle. The starting resistance means and the braking resistance means vary in a series of steps which progressively decrease the starting and braking resistance as the speed of the vehicle increases and progressively decreases the starting and braking resistance as the speed of the vehicle decreases



within predetermined limits so that the variation in the starting resistance is effective in the low speed range while the variations in the braking resistance are effective in the high speed range. In addition, the governor of the present invention is mounted directly onto the output drive shaft of the motor so that there is no danger of failure of the governor as a result of a failure of any transmission used to transmit power to the governor which might otherwise permit the motor to rotate at high speed while the governor is inoperative.

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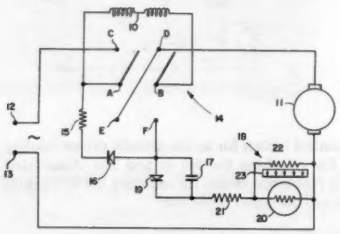
**3,794,898**

## DYNAMIC BRAKING OF ELECTRIC MOTORS WITH THERMISTOR BRAKING CIRCUIT

**Thomas A. O. Gross, Concord Rd. R.F.D., Lincoln, Mass. 01773**

**Filed Feb. 26, 1973, Ser. No. 335,686**
**Int. Cl. H02p** *3/24*
**U.S. Cl. 318—380** **12 Claims**



A motor system for energizing and deenergizing an electric motor and for dynamically braking the motor to a halt after deenergization. When the motor is turned off, a dynamic braking circuit is connected in series with the motor windings to assure generator action and to provide for dissipation of the kinetic energy of the motor. The braking circuit incorporates a thermistor through which braking currents flow. Because of its comparatively high resistance at ambient temperatures the thermistor opposes high surge currents at the initiation of braking, thereby reducing arcing at the motor brushes when the kinetic energy of the motor is highest. As the motor decelerates, the resistance of the thermistor reduces automatically because of self-heating, thereby maintaining large currents in the braking circuit to bring the motor quickly to a halt.

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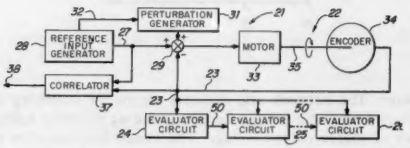
**3,794,899**

## SERVO MOTOR DRIVEN ENCODER ERROR EVALUATION SYSTEM

**Donald H. Breslow, Framingham Center, Mass., assignor to Itek Corporation, Lexington, Mass.**

**Filed June 19, 1972, Ser. No. 263,886**
**Int. Cl. G05b** *19/28*
**U.S. Cl. 318—602** **22 Claims**




Disclosed is a system for evaluating errors in high precision encoders. A phase-lock servo system provides accurate and constant shaft speed control of an encoder under test and integration capability is provided to average either angle or time readings obtained during a plurality of revolutions of the encoder and thereby reduce the random errors originating in the testing apparatus. Also provided is a speed perturbation generator for checking the system's operability.

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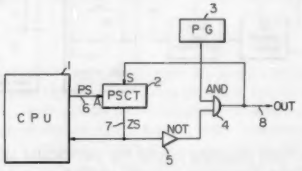
**3,794,900**

## PULSE INTERPOLATION SYSTEMS

**Kengo Kobayashi, Kawasaki, and Yoshiaki Kato, Tokyo, both of Japan, assignors to Fujitsu Limited and Fujitsu Fanuc Limited, both of Tokyo, Japan**

**Filed Sept. 7, 1972, Ser. No. 286,884**
**Claims priority, application Japan, Sept. 13, 1971, 46-71423**
**Int. Cl. G05b** *19/28*
**U.S. Cl. 318—603** **6 Claims**




Pulse interpolation system for fast and accurate numerical control of machine tools, having a small scale computer with software which processes and sends out the numerical command; counting means which memorizes said numerical command, the content of said counting means being added or subtracted from each interpolation pulse, and; a pulse generator circuit which provides interpolation pulses from the time when said counting means memorizes said numerical command until the content of said counting means reaches the predetermined value, e.g., zero.

3,794,901

## DEVICE FOR IMPARTING AN ALTERNATING ROTARY MOTION TO A BODY, ABOUT A MECHANICAL AXIS

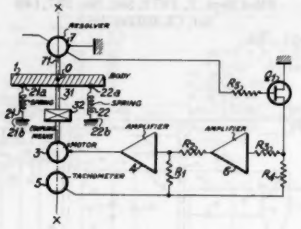
Robert Gendreu, and Serge Platel, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 8, 1972, Ser. No. 287,482

Claims priority, application France, Sept. 14, 1971, 7133073

Int. Cl. G05g 5/00

U.S. Cl. 318—627 5 Claims




To a body, imparted in alternating rotary motion about a mechanical axis attached to a fixed support, by a motor, there are fixed the ends of springs whose respective other ends are connected to said fixed support. The springs restore, in the form of kinetic energy, the stored potential energy; the energy to be supplied by the motor in order to sustain the motion, is limited to that required to compensate for friction losses. An angle detector supplies a control signal from a negative feedback loop in the motor supply, the motor supply also comprising an ordinary feedback or reaction loop.

3,794,902

## BACKLASH COMPENSATING APPARATUS FOR NUMERICALLY CONTROLLED MACHINE TOOL

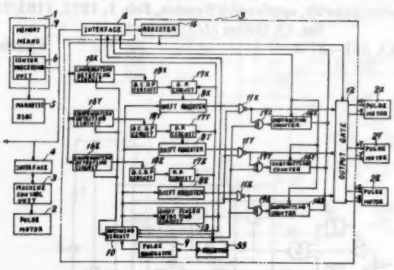
Hideo Nishimura; Kimio Kanou, both of 2-52, Shintomi-cho, Kariya-shi, Aichi-ken, and Tamotsu Ishigaki, 1-3, Koue, Chiryu-shi, Aichi-ken, all of Japan

Filed Feb. 12, 1973, Ser. No. 331,370

Claims priority, application Japan, Feb. 12, 1972, 47-15018

Int. Cl. G05b 11/01

U.S. Cl. 318—630 6 Claims



The backlash in the feed screw system of a machine tool is automatically compensated so as to obtain a high degree of machining accuracy. When the direction of the feed motion is required to be changed, the normal feed motion is temporarily interrupted, and backlash compensating data are supplied to a shift register, which is also used for normal feed operation, so that backlash compensation may be accomplished. Thereafter, a pulse generator supplies a series of pulse signals to the shift register to trigger drive pulse signals which are supplied to a pulse motor, the drive pulse signals being generated in accordance with the backlash compensating data.

3,794,903

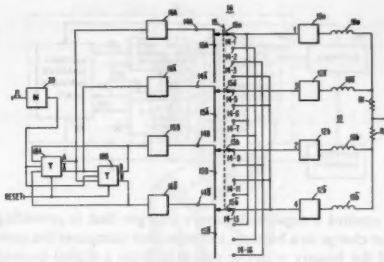
## VERNIER CONTROL FOR A STEPPER MOTOR

James G. Barcomb, Endicott, and John Mako, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,063

Int. Cl. G05b 19/40

U.S. Cl. 318—696 6 Claims



A multi-position switch is connected between the windings of a stepper motor and a pair of triggers which are connected to operate in a reflected binary mode for sequentially energizing the windings of the motor in response to a series of motor advance pulses causing the motor to advance in a stepwise fashion. The multi-position switch has one pole connected to each output of the triggers and has the different positions of each pole so connected to a different motor winding that movement of the switch in one direction causes the motor to advance one step for each position and movement in the other direction causes it to reverse one step for each position.

3,794,904

## ELECTRO-MECHANICAL VOLTAGE REGULATORS WITH POLARITY PROTECTION FOR USE IN BATTERY CHARGING SYSTEMS ON ROAD VEHICLES

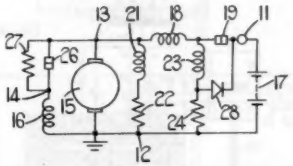
Albert William Winkley, Southall Cottage, Hadley, near Ombersley, Worcestershire; Wilson Hume Tannahill, 269 Ralph Rd., Shirley, Solihull, Warwickshire, and Jeremy Peter Freeman, 37 Park Ave., Solihull, Warwickshire, all of England

Filed Feb. 18, 1972, Ser. No. 227,553

Claims priority, application Great Britain, Mar. 1, 1971, 5,676/71

Int. Cl. H02j 7/14

U.S. Cl. 320—25 3 Claims

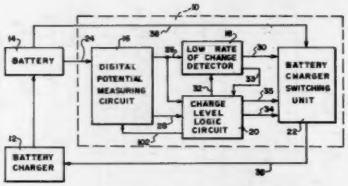



An electro-mechanical voltage regulator for a battery charging system on a road vehicle has regulator contacts in series with the field winding of a dynamo, and cut-out contacts for preventing the battery from discharging through the dynamo, the two sets of contacts being operated by windings. In such a regulator, means is incorporated for sensing incorrect connection of the battery and for reducing the regulated voltage if the battery is incorrectly connected so that the cut-out contacts are not closed by the cut-out winding, and cannot therefore be damaged.

## 3,794,905
## BATTERY CHARGER CONTROL

Ronald E. Long, Redlands, Calif., assignor to Lester Electrical of Nebraska, Inc., Lincoln, Nebr.

Filed Oct. 17, 1972, Ser. No. 298,344
Int. Cl. H02j 7/04
U.S. Cl. 320—20 19 Claims

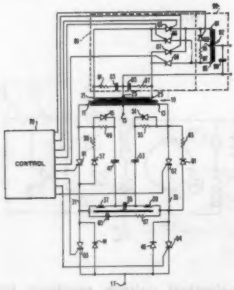



To control a regulated battery charger that is providing a regular charge to a battery, a comparator compares the potential of the battery with the potential from a digital-to-analog converter, and in response to this comparison: (1) activates a multivibrator when the potential of the battery is greater than the potential of the digital-to-analog converter, with the multivibrator pulsing a first counter that is connected to the digital-to-analog converter so that the count of the first counter and the potential of the digital-to-analog converter follow in discrete increments the increase in the potential of the battery as the battery is charged by the battery charger; and (2) provides reset pulses to the reset terminal of a second counter each time that the potential of the battery increases above the potential of the digital-to-analog converter, with the second counter causing the battery charger to be de-energized when it reaches a predetermined count between reset pulses.

## 3,794,906
## ELECTRICAL CONVERTER

Harry Swartzlander Hoffman, Jr., Saugerties, and Kenton Hugh Knickmeyer, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,707
Int. Cl. H02m 3/22
U.S. Cl. 321—2 6 Claims

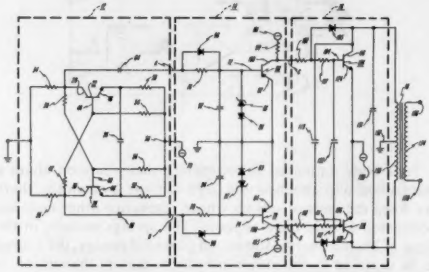



A full wave inverter circuit having a DC input voltage and an AC output voltage of controlled fundamental frequency. Constant amplitude voltage pulses are applied to a center tapped primary winding of a transformer to generate alternating current pulses in a center tapped secondary winding of the transformer. The center tapped secondary winding is connected to a converter to convert the alternating current pulses into unidirectional positive pulses and alternately into unidirectional negative pulses which are applied to an electrical load through a filter. The width and repetition of the constant amplitude voltage pulses is varied so that the integral of the converted alternating current pulses constitutes a lower frequency alternating current output waveform.

## 3,794,907
## CONVERTER CIRCUIT

Dermot Thomas Fucito, Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 7, 1972, Ser. No. 287,140
Int. Cl. H02m 7/52
U.S. Cl. 321—16 12 Claims

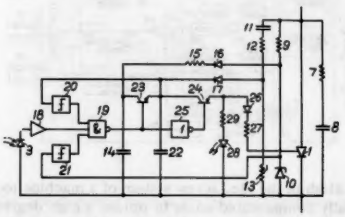


An oscillator driven converter circuit with a push pull power output stage including a regenerative feedback circuit wherein the signals from an oscillator circuit are applied to the power output stage so that the regenerative feedback circuit provides the switching current for the push pull power stage, under the control of, and at the frequency of, the oscillator signals.

## 3,794,908
## THYRISTOR RECTIFIER FOR HIGH VOLTAGE

Georg Lindblom, and Karl-Erik Olsson, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Jan. 29, 1973, Ser. No. 327,439
Claims priority, application Sweden, Feb. 1, 1972, 1102/72
Int. Cl. H02m 7/48; H03k 17/72
U.S. Cl. 321—27 R 6 Claims



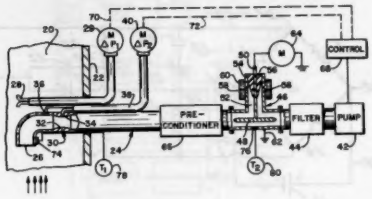
A thyristor rectifier for high voltage is formed of a plurality of thyristors connected in series and each having a control circuit controlled from a common control device. Connected to each control circuit is a light emitter of semiconductor type which emits a signal for the corresponding thyristors as long as the control circuit is intact and is being properly fed and the thyristor voltage has the proper polarity.

3,794,909

## APPARATUS FOR AND METHOD OF SENSING PARTICULATE MATTER

Thomas B. Smith, Brighton, Mass., assignor to Ikor Incorporated, Burlington, Mass.

Filed Dec. 8, 1971, Ser. No. 205,784
Int. Cl. G01r 5/28
U.S. Cl. 324—32 3 Claims




This invention concerns sensing particulate matter entrained in a gas flow that is isokinetically sampled. The sample is flowed past an ungrounded electrode with which the particles in the sample impact and transfer electrical charge. The sample also flows past a grounded electrode to complete a circuit. Measurement is made of the minute current flow in the circuit, which current is linear with respect to the square of the average velocity of the particles impelled by the gas flow.

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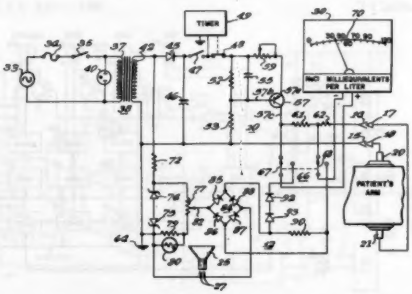
3,794,910

## IONTOPHORESIS AND CONDUCTIVITY ANALYSIS CIRCUIT

Donald A. Ninke, Austin, Tex., and James F. LaHay, St. Louis, Mo., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Division of Ser. No. 880,807, Nov. 28, 1969, abandoned. This application July 26, 1971, Ser. No. 166,284
Int. Cl. G01n 27/02; A61b 5/00
U.S. Cl. 324—30 R 10 Claims



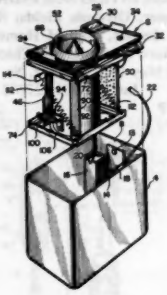

An iontophoresis inducing circuit includes means to limit to a safe value and to control a generated direct current for connection to iontophoresis electrides on a patient in order to produce sweat. A sweat sample is collected and analyzed to detect for cystic fibrosis. A sweat analysis circuit includes solid state switching for passing current of continuously alternating polarity through the sweat sample, and nonlinear means for converting the current into a direct reading of milliequivalents of sodium chloride per liter.

3,794,911

## WEIGHT RESPONSIVE MOISTURE TESTER HAVING TIME DELAY MEANS AND TEMPERATURE COMPENSATION

George H. Fathauer, Decatur, Ill., assignor to Dickey-John Corporation, Chatham, Ill.

Filed Aug. 23, 1972, Ser. No. 283,216
Int. Cl. G01r 27/26
U.S. Cl. 324—61 QS 21 Claims



A grain sample moisture tester comprises a reference oscillator and a variable oscillator, the latter having a capacitor across its tank circuit that constitutes a test cell such that the dielectric constant of the capacitor is modified in accordance with the dielectric constant of the grain sample. The test cell is suspended on a frame or chassis such that when a predetermined amount of grain has been introduced into the test cell, a switch is closed to initiate a digital measuring circuit to provide a moisture reading. The readout is accomplished by relating the frequency of the variable oscillator to the frequency of the reference oscillator. Auxiliary temperature correction circuitry can be activated after the initial moisture determination has been made to correct the readout for temperature variations from a reference temperature.

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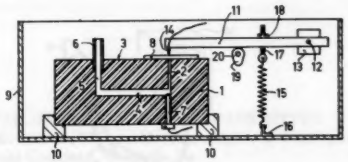
3,794,912

## CONTACT DEVICE USING CONDUCTIVE FLUID FOR MEASURING RESISTANCE AND CAPACITANCE OF SEMICONDUCTOR

Petrus Johannes Wilhelmus Severin; Gerardus Johannes Maria Poodt, and Gerard Vermeulen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1972, Ser. No. 253,306
Claims priority, application Netherlands, May 19, 1971, 7106853
Int. Cl. G01r 27/02
U.S. Cl. 324—62 8 Claims



A contact device comprising an insulating block having a flat upper surface which forms a place for receiving a semiconductor body, in which block at least one duct is present which opens into the upper surface and forms a contact place there, the block comprising a storage container for an electrically conductive liquid, for example mercury, communicating with the duct, said liquid being forced to the con-

tact place by means of a gas under pressure in the duct, an electric conductor being passed through the block of which one end is connected to the liquid and the other end can be connected to a measuring instrument. The contact device may advantageously be used in carrying out a capacity-voltage measurement or a spreading resistance measurement in semiconductor materials.

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**3,794,913**

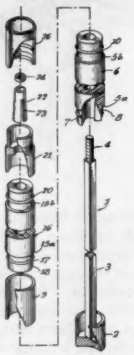
**PHASE INTERFACE INDICATOR**

**Wendell P. Cropper, Olympia Fields; Sixt Frederick Kapff, and Robert B. Jacobs, both of Homewood, all of Ill., assignors to Standard Oil Company, Chicago, Ill.**

**Filed May 18, 1972, Ser. No. 254,446**

**Int. Cl. G01r** *27/02*

**U.S. Cl. 324—65 P** **4 Claims**



Disclosed is an apparatus for detecting the location of the interface between two phases of matter of substantially different conductivity. The apparatus includes a plurality of insulated conductive members spaced along an axis and adapted for suitable electrical connections whereby it may be determined which of the conductive members are immersed in the conductive phase and which are in the non-conductive phase.

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**3,794,914**

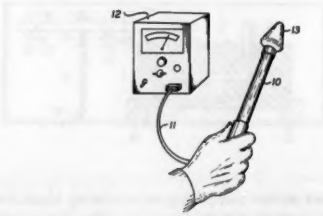
**RADIATION DETECTOR EMPLOYING RESISTIVE CONNECTED THERMOCOUPLE ELEMENTS**

**Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.**

**Continuation-in-part of Ser. No. 848,620, Aug. 8, 1969, Pat. No. 3,641,439. This application Nov. 19, 1971, Ser. No. 200,536**

**Int. Cl. G01r** *21/04, 5/22*

**U.S. Cl. 324—95** **4 Claims**



A Radiation Detector having thin film thermo-couples disposed within a plane and supported by a non-perturbing probe which permits accurate measurement of an electric field in the near-field region.

**3,794,915**

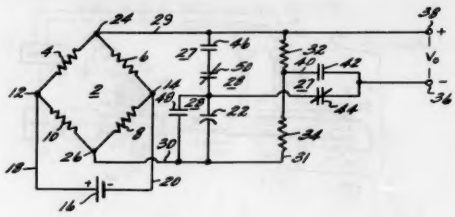
**CIRCUITRY FOR DETECTING LOW AMPLITUDE RAPID VARIATIONS IN A HIGH AMPLITUDE OUTPUT SIGNAL**

**John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Cincinnati, Ohio**

**Filed July 23, 1971, Ser. No. 165,522**

**Int. Cl. G01r** *19/00, 1/02*

**U.S. Cl. 324—111** **2 Claims**



Measuring circuitry is described having the capability of providing output signals indicative of low amplitude, rapid variations in a higher amplitude, slowly changing signal. The circuitry includes a transducer upon which the signals are imposed, a storage device such as a capacitor which is intermittently connected to output terminals of the transducer, means for coupling the capacitor to a data recovery system, and a sampling relay for changing the capacitor connection between the transducer and the data system whereby the average input voltage to the data system is reduced to zero but any variations in the signal are faithfully indicated.

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**3,794,916**

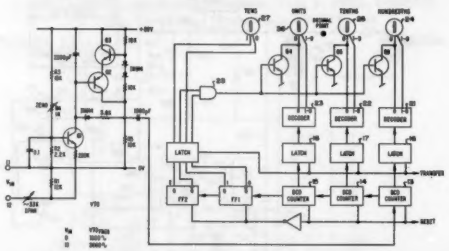
**DIGITAL VOLTMETER**

**Jean Ritzenthaler, Geneva, Switzerland, assignor to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed Mar. 9, 1972, Ser. No. 233,123**

**Int. Cl. G01r** *17/06;* **H03k** *13/00*

**U.S. Cl. 324—99 D** **3 Claims**



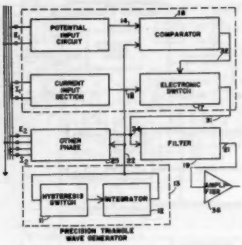
A digital voltmeter wherein the DC voltage to be measured is converted into a linear current which in turn is converted into a proportional voltage used to drive a voltage tunable oscillator producing an output pulse train with a repetition rate proportional to the input voltage, a digital counter system being utilized to count the pulses and record the count on a digital display. In one embodiment, the voltmeter measures positive input voltages in voltage increments producing 1 Hz pulse rate changes over a range of 1,000 Hz. In a second embodiment the voltmeter measures both positive and negative incoming voltages, with means for indicating to the operator the sign of the measured voltage.

3,794,917

## ELECTRONIC WATT TRANSDUCER

Joseph A. Martin, Hilliard, and James M. Hoover, Columbus, both of Ohio, assignors to Esterline Corporation, New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,067
Int. Cl. G01r 21/00
U.S. Cl. 324—142 4 Claims



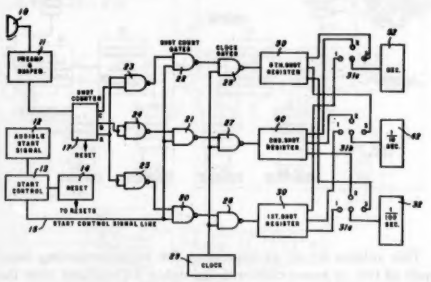

A potential input circuit and a current input circuit, each having a transformer therein, receives the input information from the power line for which the true electrical power is to be measured. The scaled output from the potential input circuit, and a triangle wave signal from a generator therefor are coupled to a comparator (level crossing detector) employing an open loop operational amplifier (op amp) having an output controlling electronic switches to gate the current transformer secondary current, with a duty ratio proportional to voltage amplitude and polarity. The gated output of the current transformer is filtered and coupled through an amplifier, or directly, to an external load. The filtered output is in the form of a linear direct current analog of true power in the power line.

3,794,918

## TIMING SYSTEM FOR TIMING A SERIES OF EVENTS

Paul H. Mallett, Rt. 5, Box 226, and Calvin Pipes, both of Monroe, La., assignors to said Mallett, by said Pipes

Filed Jan. 8, 1973, Ser. No. 321,746
Int. Cl. G04f 9/00, 11/06
U.S. Cl. 324—186 7 Claims



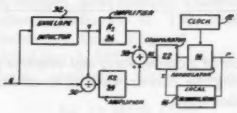

The invention relates to a timing system designed to count a series of events and the time lapse of the occurance of each event from a starting signal. A plurality of gates control clock pulses which are counted by a number of counter-registers, the number of which depends upon the number of events to be counted. As each event is counted, a different one of the counter-registers is stopped from counting clock pulses thereby recording the lapse time from the starting signal to the occurance of the event.

3,794,919

## OUTSIDE LOOP ADAPTATIVE DELTA MODULATION SYSTEM

Michel Villeret, Sherbrooke, Quebec; Hubert Stephenne, Rock Forest, Quebec, and Pierre A. Deschenes, Sherbrooke, Quebec, all of Canada, assignors to Universite De Sherbrooke, Bureau des Recherches et des Bourses, Sherbrooke, Quebec, Canada

Filed Jan. 5, 1973, Ser. No. 321,522
Int. Cl. H03k 13/22
U.S. Cl. 325—38 B 3 Claims




An outside loop adaptive delta modulation system. The transmission side of the system includes an envelope detector for detecting the envelope of an analog input signal and a divider for dividing the analog input signal by the envelope signal detected in order to produce a normalized analog signal. An adder is provided for adding the envelope signal and the normalized analog signal and the output of such adder is fed to a non-adaptative delta modulator for modulating the output signal of the adder. The receiving end of the delta modulation system includes a first local demodulator for demodulating an input signal received from the modulator and composed of the envelope of the analog signal and of the normalized signal resulting from the division of such analog signal by the envelope signal, and a low pass filter connected to the output of the first local demodulator for recovering the envelope signal. Such envelope signal corresponds to the envelope signal detected at the input of the transmission side of the delta modulation system. A second local demodulator is also provided for demodulating the normalized signal. The input of such second local demodulator is connected to the input of the receiving system through delay means so as to delay the input of the second local demodulator in such a way that its output is in phase with the output of the above-mentioned low pass filter. The output of the low pass filter and the one of the second local demodulator are fed to a multiplier so as to permit to recover the analog signal. The output of the multiplier is fed to a band-pass filter to eliminate the envelope signal present in the output of the second local demodulator and to filter the high frequency components of the signal which are higher than the audio level.

3,794,920

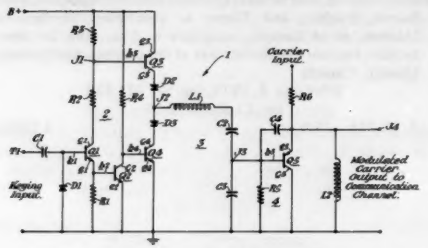
## FAIL-SAFE CODE KEYING TRANSMITTER

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Sept. 15, 1971, Ser. No. 180,644
Int. Cl. H04b 1/04
U.S. Cl. 325—105 6 Claims

This disclosure relates to a fail-safe code keying transmitter wherein a modulating signal is reshaped to remove the harmonic producing portions therefrom prior to the modulation of a carrier wave. The code keying transmitter includes an electronic switching circuit and a series resonant L-C circuit for transforming the leading edge of the square-wave input

signal into one half cycle of a cosine wave and for transforming the trailing edge of the square wave input signal into another half cycle of a cosine wave and employs a modulating circuit for varying the carrier wave in accordance with the transformed cosine wave.

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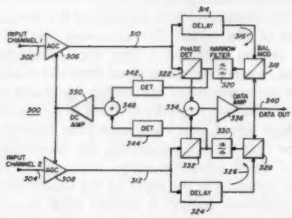
**3,794,921**

## DIFFERENTIALLY ADAPTIVE COMMUNICATION SYSTEM

**Manfred G. Unkauf, Franklin, Mass., assignor to Raytheon Company, Lexington, Mass.**

**Filed Nov. 24, 1971, Ser. No. 201,750**
**Int. Cl. H03d** *3/00*
**U.S. Cl. 325—42** **32 Claims**




A communication system for improved reception of signals over distorted communication channels, multipath environments and telephone cables is disclosed in which phase shift keyed coded pulses are transmitted such that their respective multipath contributions are separable at a differentially adaptive receiver which stores previous samples of the distorted transmitted pulse for use as a reference in a coherent matched filter type detector employing decision feedback to allow coherent detection without channelizing filters in systems using both binary and four phase modulation. The differentially adaptive receiver is employed both in modulator-demodulator type systems and in predetection combination communication systems.

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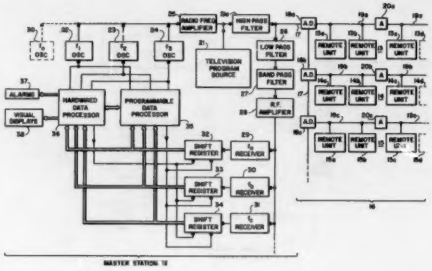
**3,794,922**

## DATA SAMPLING COMMUNICATION SYSTEM

**William Osborn, Dallas, and Bob Carter, Euless, both of Tex., assignors to Tocom, Inc., Irving, Tex.**

**Filed Jan. 26, 1972, Ser. No. 220,988**
**Int. Cl. H04b** *1/00, 7/00*
**U.S. Cl. 325—53** **9 Claims**

Disclosed is a system for sampling or interrogating selected ones of a plurality of remote units at which are located television receivers, to determine which of a plurality of television channels are being viewed at the interrogated remote units at the particular time of interrogation. The system includes a master station which transmits interrogation signals simultaneously to a plurality of remote units. Each remote unit includes a data transducer mechanism and a transmitter mechanism for transmitting reply signals back to the master station. The data transducer is coupled to the television receiver channel selector and is responsive thereto for generating data signals representing the particular channel being viewed at any given instant. Each remote unit also includes a data readout mechanism responsive to readout signals transmitted from the master station for producing a digital data signal representative of the data signal generated by the data transducer and supplying same to the transmitter mechanism. The disclosed system is especially adapted for use in a community antenna or cable television system in which each remote unit is coupled to the cable system.

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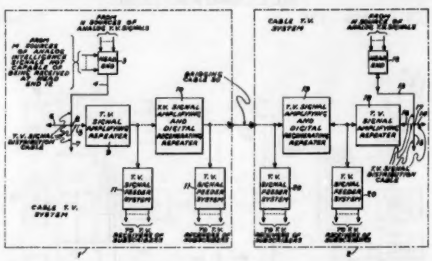
**3,794,923**

## HEAD END INTERCONNECTION SYSTEM FOR CABLE TV SYSTEMS

**Lynn W. Ellis, Westport, Conn., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed Dec. 14, 1972, Ser. No. 315,067**
**Int. Cl. H04n** *7/16, 7/08*
**U.S. Cl. 325—308** **40 Claims**



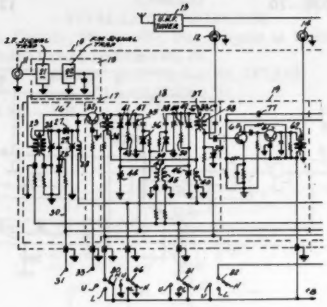

This relates to an arrangement for interconnecting head ends of two or more conventional cable TV systems over the distribution cable or trunk employed for the TV signal distribution in a cable TV system. The technique employed is frequency division multiplexing a digitally encoded TV signal or signals capable of being received at one head end but not at the other head end of the two cable TV systems on the distribution cables of the two cable TV systems employed for conventional TV signal distribution under conditions avoiding mutual interference between the frequency division multiplexed digitally encoded TV signal or signals and the conventional analog TV signal or signals being distributed.

3,794,924

## MULTI-CHANNEL WAVE RECEIVER

Shigeo Furuya, Tokyo, and Koji Ouchi, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 12, 1972, Ser. No. 262,155
Claims priority, application Japan, June 17, 1971, 46/43745
Int. Cl. H04b *1/16*
U.S. Cl. 325—439 3 Claims



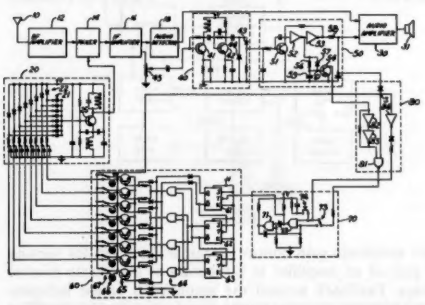
A television signal receiving circuit having a solid state VHF and UHF tuner. The VHF tuner includes a number of resonant circuits and solid state switching means to switch between low and high bands within the VHF frequency range. The UHF tuner is coupled directly to an input of the mixer associated with the VHF tuner. The local oscillator associated with the VHF tuner has two means for injecting the oscillator voltage into the mixer. One of the injection means operates only on high frequency band and is controlled by a switching diode. The various resonant circuits of the VHF tuner utilize dumping impedances which are switched in and out of operation in order to equalize the resonant gain between low and high frequency band operation.

3,794,925

## FREQUENCY-SKIPPING SYSTEM FOR A SIGNAL-SEEKING RECEIVER

Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Chicago, Ill.

Filed June 27, 1972, Ser. No. 266,712
Int. Cl. H04b *1/32*
U.S. Cl. 325—470 1 Claim



A frequency-skipping system is provided for a signal-seeking receiver which automatically tunes the receiver to one of a plurality of predetermined frequencies whenever a signal corresponding to one of the predetermined frequencies is received. A scanning circuit causes the receiver to automatically scan a plurality of predetermined frequencies and tune to a received signal having a frequency corresponding to one of the predetermined frequencies. A switching network is operable to cause the scanning circuit to skip those frequencies which the operator does not want to monitor.

## ERRATUM

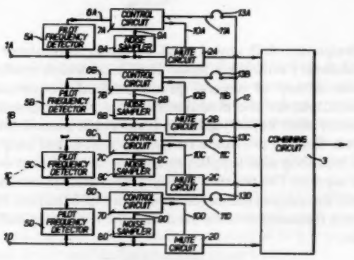
For Class 325—185 see:
Patent No. 3,794,852

3,794,926

## DIVERSITY COMBINING ARRANGEMENTS

Brian Stanley Skingley, and Anthony Thomas Curtis, both of Essex, England, assignors to The Marconi Company Limited, Chelmsford, Essex, England

Filed Nov. 6, 1972, Ser. No. 303,868
Claims priority, application Great Britain, Dec. 3, 1971, 56127/71
Int. Cl. H03k *17/02*
U.S. Cl. 328—104 5 Claims



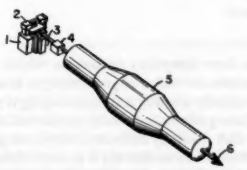
A diversity combining arrangement for combining signals on at least two paths, each path comprising, a muting circuit and means for detecting a pilot frequency signal on the path, control means being provided, responsive to a loss of pilot frequency on the path for rendering the associated muted circuit operative, the control means for each path being interdependent such that upon a loss of pilot frequency on more than one path all of the control means are inhibited from rendering the muting circuits operative.

3,794,927

## SYSTEM FOR PRODUCING HIGH ENERGY POSITIVELY CHARGED PARTICLES

Allan A. Fleischer, Lafayette; George O. Hendry, Napa, and Dale K. Wells, Martinez, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 20, 1970, Ser. No. 4,223
Int. Cl. H05h *5/06*
U.S. Cl. 328—233 15 Claims



A system for producing high energy positively charged particles which includes in series a source of negative ions; means

axially injecting these ions into a small cyclotron which accelerates the ions to a first energy level; means extracting negative ions from the cyclotron in a high quality beam; and a two-stage tandem Van de Graaff accelerator which accepts the beam of negative ions at the first energy level, then accelerates them to a second higher energy level, strips their negative charge, and finally accelerates the resulting positive particles to a still higher third energy level.

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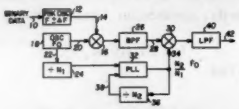
3,794,928

## FREQUENCY SHIFT KEYED DEMODULATOR

**Theodore M. Stump, Costa Mesa, and Jerry G. Williford, Tustin, both of Calif., assignors to Collins Radio Company, Dallas, Tex.**

**Filed Apr. 18, 1973, Ser. No. 352,377**
**Int. Cl. H04l 27/14; H03b 3/06**
**U.S. Cl. 329—104** **4 Claims**




A frequency shift keyed (FSK) modem (modulator and/or demodulator) utilizing a phase lock loop which modem may operate at any of several predetermined frequencies and whose output for the modulator section, is combined with a frequency shift keyed signal and the result passed through a low pass filter to provide a frequency shift keyed output. The phase lock loop also supplies signals to the receive or demodulation section. The use of a multiple frequency phase lock loop negates the requirements for a plurality of bandpass filters of different frequencies to be used with the frequency shift keyed source.

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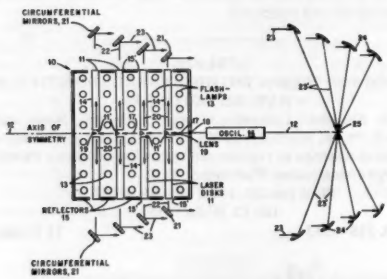
3,794,929

## COMPACT LASER AMPLIFIER SYSTEM

**Ronald B. Carr, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.**

**Filed Oct. 13, 1972, Ser. No. 297,537**
**Int. Cl. H01s 3/02**
**U.S. Cl. 330—4.3** **8 Claims**



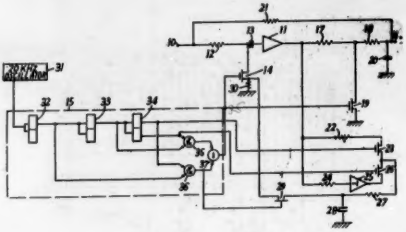

A compact laser amplifier system in which a plurality of face-pumped annular disks, aligned along a common axis, independently radially amplify a stimulating light pulse. Partially reflective or lasing means, coaxially positioned at the center of each annular disk, radially deflects a stimulating light directed down the common axis uniformly into each disk for amplification, such that the light is amplified by the disks in a parallel manner. Circumferential reflecting means coaxially disposed around each disk directs amplified light emission, either toward a common point or in a common direction.

3,794,930

## ELECTRICALLY CONTROLLED SWITCHING CIRCUITS

**Howard Anthony Dorey, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England**

**Filed Mar. 12, 1969, Ser. No. 806,644**
**Claims priority, application Great Britain, Mar. 15, 1968, 12847/68**
**Int. Cl. H03f 3/38**
**U.S. Cl. 330—10** **12 Claims**



In a chopper stabilized amplifier using FET or other electronic chopper switches, the input chopper switch introduces a frequency dependent error on account of inter-electrode capacitances leading to asymmetrical coupling through the chopper drive waveform. The invention discloses apparatus which modulates the frequency or amplitude of the drive waveform, synchronously demodulates the amplifier output and uses the error signal thus derived to apply corrective feedback at the input to the amplifier.

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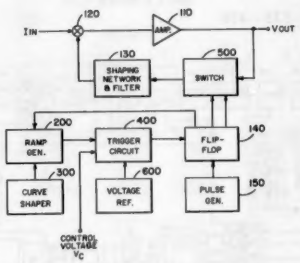
3,794,931

## ELECTRONIC GAIN CONTROL

**Peter Albrecht, Manhattan Beach, and Kenneth L. Bays, Huntington Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Oct. 10, 1972, Ser. No. 296,474**
**Int. Cl. H03g 3/30**
**U.S. Cl. 330—29** **9 Claims**




An automatic gain control circuit is disclosed for varying the gain of an amplifier as a function of a separate control voltage. Feedback around the amplifier is varied independently from the amplifier output signal, changing the amplifier gain curve without changing the feedback control voltage therefor. Pulse-time modulation is used for feedback control with the pulse amplitude being proportional to the amplifier output and the pulse width a function of the control voltage. An electronic switch in the amplifier feedback path affords complete isolation between the driving voltage and the ampli-

fier output signal. The switch is gated with a bistable multivibrator that is alternately triggered by pulses from a fixed pulse generator and pulses from a variable slope, ramp generator.

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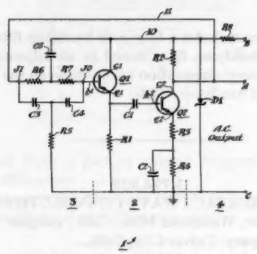
3,794,932

## VITAL LEVEL DETECTOR

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Apr. 26, 1972, Ser. No. 247,552
Int. Cl. H03b 5/26
U.S. Cl. 331—110 10 Claims



This disclosure relates to a fail-safe level detecting circuit including a solid state amplifier having a feedback loop. The feedback loop includes a frequency determining twin-tee network and a voltage breakdown device. The amplifier produces a.c. oscillations when and only when the level of a d.c. voltage exceeds the threshold value of the voltage breakdown device.

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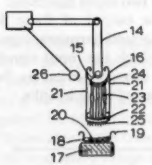
3,794,933

## HAIR POPULATED MATERIAL

Terence Francis Moorhead, 53 Childwall Priory Rd., Liverpool, England

Filed Mar. 8, 1973, Ser. No. 339,044
Int. Cl. A41g 3/00
U.S. Cl. 132—5 24 Claims



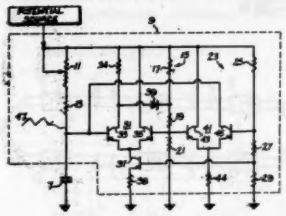
The invention relates to a process for the manufacture of hair-populated material, more particularly hair-pieces, by the embedment of natural or synthetic hair in a fluid base material and the solidification of the base material to anchor the hairs therein. Prior to embedment the hairs in a bundle are separated from each other by electrically charging the hairs in a bundle resulting in the mutual repulsion of the hairs from each other.

3,794,934

## NON-SATURATING OSCILLATOR AND MODULATOR CIRCUIT

Dong Woo Rhee, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Continuation-in-part of Ser. No. 225,856, Feb. 14, 1972, abandoned. This application Nov. 2, 1972, Ser. No. 303,227
Int. Cl. H03c 3/00; H03b 15/12
U.S. Cl. 332—16 T 26 Claims



A non-saturating oscillator and modulator circuit includes a charging circuit coupled to a potential source and potential reference level, first and second electron devices coupled to the potential source and by a third electron device to the potential reference level with the first electron device coupled to the charging circuit and by way of a fourth electron device to a first bias potential circuit. Fifth and sixth electron devices are coupled to the potential reference level with the fifth electron device coupled to the first bias circuit and potential source and the sixth electron device coupled to a second bias potential circuit and to the charging circuit.

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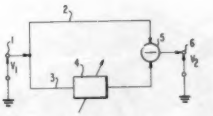
3,794,935

## VARIABLE EQUALIZER

Toru Tsuchiya, and Seiya Shida, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 30, 1972, Ser. No. 257,551
Claims priority, application Japan, June 9, 1971, 46-41296
Int. Cl. H03h 7/14
U.S. Cl. 333—28 R 9 Claims



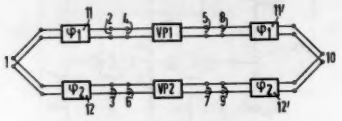
An equalizer, having a variable amplitude characteristic, for equalizing amplitude distortion especially in frequency-division multiplexed systems. The equalizer includes parallel signal paths, one path transmitting received signals essentially unchanged while the second path includes a circuit network having the transfer function $t_A = (2\alpha\, k/1 + \alpha k)$. The parallel paths are coupled to a subtraction circuit, the output of the subtraction circuit appearing as the output of equalizer. The ratio of the output signal $V_2$ at the output of the subtraction circuit to the input signal $V_1$ is equal to $(1 - \alpha k/1 + \alpha k)$. Various circuit arrangements which produce the transfer function $T_A$ are disclosed.

3,794,936

## DIVIDING FILTER NETWORK FORMING AN ALL-PASS FILTER CIRCUIT

Werner Poschenrieder, Schuckertstrasse 14, and Erwin Buecherl, Gabriel-Max Strasse 43, both of Munich, Germany

Continuation-in-part of Ser. No. 73,879, Sept. 21, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,858
Claims priority, application Germany, Sept. 22, 1969, 1947889
Int. Cl. H03h 7/02, 7/14; H04b 3/14
U.S. Cl. 333—28 R 7 Claims




A dividing filter network wherein two port circuits, such as transformers, reactance circuits, equalizers and amplifiers, are interconnected in each branch of a mirror-image arrangement, the two-port circuits being designed and constructed in such a way that the frequency characteristics of the entire network agrees with the predetermined frequency characteristics of the interconnected two-port circuits, except for an additional phase.

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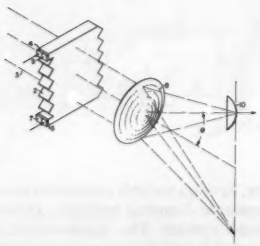
3,794,937

## FOLDED PATH ACOUSTIC DELAY LINE AND OPTICAL PROCESSOR

Milton Gottlieb, Pittsburgh, and John J. Conroy, Verona, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 20, 1972, Ser. No. 246,007
Int. Cl. H03h 7/30; G02f 1/28
U.S. Cl. 333—30 R 16 Claims



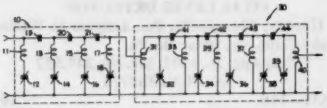
A folded path acoustic device of a homogeneous solid material in which an acoustic signal is folded in a non-overlapping path used as a processor or delay line. The acoustic signal is reflected from facets of the body in a planar path in a manner to avoid mode conversion. The acoustic signal can also be folded from one planar path to another in a three-dimensional configuration of the delay line.

3,794,938

## COUPLED BANDSTOP/BANDPASS FILTER

Donald A. Boelter, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed May 3, 1971, Ser. No. 139,639
Int. Cl. H03h 7/08, 7/38
U.S. Cl. 333—70 R 1 Claim



This disclosure includes a four pole bandstop filter coupled to a five pole bandpass filter tuned to an adjacent band to achieve a very steep attenuation curve between the two bands and an increased bandstop width.

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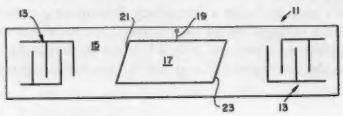
3,794,939

## NONLINEAR SURFACE WAVE CONVOLUTION FILTER

Michael Waldner, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 2, 1973, Ser. No. 347,019
Int. Cl. H03h 7/02, 7/14, 9/32
U.S. Cl. 333—72 8 Claims




Nonlinear surface wave interaction devices having a pair of input electro-acoustic transducers disposed on a piezoelectric substrate with a coupling plate disposed on the substrate and intercepting the intersecting acoustic surface wave signals generated by the two transducers are disclosed wherein one of the propagating input signals, upon overlapping and crossing the other input signal traveling in essentially an opposite direction, undergoes a time reversal with respect to the other signal to produce at the coupling plate an output signal that is the convolution of the two input functions. In order to reduce spurious signals in the output of these devices, which are caused by a traveling second harmonic signal, the edges of the coupling plate upon which the input signals are incident are angled to average the charge carried by the traveling second harmonic over a number of wave lengths.

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3,794,940

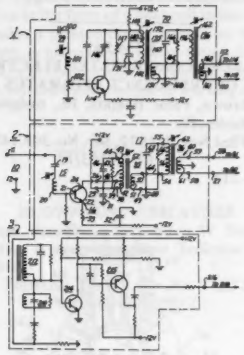
## SIGNAL CORRECTING APPARATUS

Bert H. Dann, Mountain View, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 18, 1972, Ser. No. 254,802
Int. Cl. H01h 7/08
U.S. Cl. 333—77 4 Claims

An improved apparatus for correcting effects of angular errors in chrominance sideband components of a color video signal in which the chrominance sideband components, and

signals indicative of the angular errors, as well as a substantially stable reference signal, are heterodyned to redispose the chrominance sideband components about a frequency which



is displaced from a picture carrier frequency by a stable frequency difference.

The disclosure also covers an improved band filter useful in the above mentioned and other apparatus.

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**3,794,941**

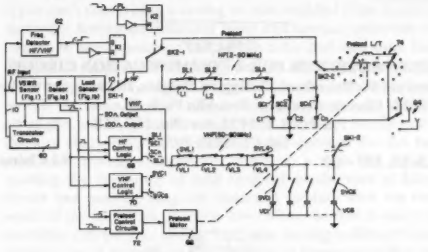
**AUTOMATIC ANTENNA IMPEDANCE TUNER INCLUDING DIGITAL CONTROL CIRCUITS**

**Lawrence R. Templin, La Mirada, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.**

**Filed May 8, 1972, Ser. No. 251,232**

**Int. Cl. H03h** *7/40*

**U.S. Cl. 333—17** **31 Claims**



An automatic antenna tuner includes digital control circuits for selecting reactive tuning elements of an antenna impedance matching network. The tuner arrangement provides for rapid transforming of multiple antenna impedances to the load resistance required for efficient transfer of power from a power amplifier of a portable radio transmitter to any selected antenna over a broad frequency range of 2 to 80 MHz, for example. The impedance matching network includes series inductive elements and shunt capacitive elements in an L configuration. Both inductive and capacitive elements are incrementally adjustable in binary value and are adjusted automatically by digital control of latching relays in response to sensed antenna impedance to switch component values in a binary sequence. The tuning of the antenna for matching to the power amplifier is detected by individual phase and impedance broad band sensors for sequencing of capacitive and inductive reactances to approach 0° phase and the desired load resistance for efficient power transfer. The tuning is continuously monitored by a voltage standing wave ratio (VSWR) sensor which initiates and controls the duration of the tuning cycles according to the detected antenna impedance matching condition.

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**3,794,942**

**SYSTEM OF VARIABLE CAPACITY DIODES**

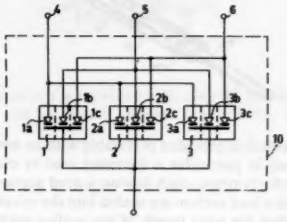
**Gunther Blankenburg, Schuckshohe, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Continuation of Ser. No. 103,762, Jan. 4, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,290**

**Claims priority, application Germany, Feb. 12, 1970, 2006333**

**Int. Cl. H03j** *3/20;* **H03h** *5/12*

**U.S. Cl. 334—15** **2 Claims**



An arrangement for tuning a receiver over two or more frequency ranges comprising at least two interconnected variable capacity systems. Each system comprises at least first and second capacitor elements, means for connecting in parallel respective first capacitors of the two systems together to form a composite variable capacitor for tuning within one of the frequency ranges, and means for connecting respective second capacitors of the two systems together to form a composite variable capacitor for tuning within the second of the frequency ranges.

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**3,794,943**

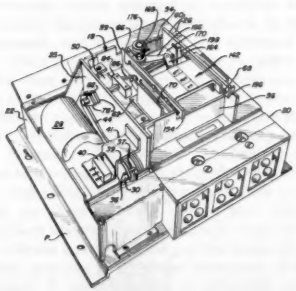
**MOTOR-DRIVEN ACTUATING MECHANISM FOR A PIVOTABLE OPERATING HANDLE OF AN ELECTRICAL CONTROL DEVICE**

**Neil R. Palmer, Cedar Rapids, and Joseph R. Karge, Anamosa, both of Iowa, assignors to Square D Company, Park Ridge, Ill.**

**Filed Aug. 30, 1972, Ser. No. 284,814**

**Int. Cl. H01h** *3/32*

**U.S. Cl. 335—69** **9 Claims**



Through an arrangement of linkages the rotary motion of the output shaft of a reversible gear motor is converted into linear motion to actuate a handle operating carriage and thereby also a pivotable operating handle of an electrical con-

trol device. A manually operable means for moving the carriage is also provided which includes means for automatically disconnecting the power to the gear motor upon application of a tool.

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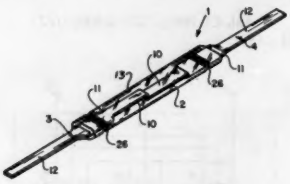
3,794,944

**REED SWITCHES AND PROCESS FOR MAKING THEM**

Vaughan Morrill, Jr., St. Louis, Mo., assignor to Morex, Inc., St. Louis County, Mo.

Filed Sept. 18, 1972, Ser. No. 290,113
Int. Cl. H01h 1/66, 51/28
U.S. Cl. 335—154 16 Claims



A reed switch is provided preferably with an envelope noncircular and in particular a flattened oval in cross section. Reed switch elements, each having a reed section, a sealing section and a lead section are sealed into the envelope along a part less than the total length of the sealing section, the unsealed part of the sealing section being in close engagement with the inner wall of the envelope. A method of making a reed switch is provided wherein reed switch elements each including a reed section, a sealing section and a lead section are inserted into a tube, preferably non-circular, the sealing section of the elements and the interior of the tube being so closely dimensioned as to permit them to locate the reed sections with respect to one another before and during a sealing process. In the preferred method, a multiplicity of pairs of switch elements are inserted in a glass tube of oval cross section, lengthwise of the tube, and sealed in place in a horizontal position, providing symmetrical sealed joints, and thereafter the tube offal between the switches is removed.

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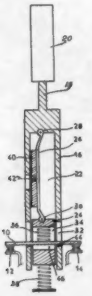
3,794,945

**AUTOMATIC TRIPPING ELECTRO-MAGNETIC CONTACTOR**

Claude Terracol, Grenoble, France, assignor to Merlin Gerin, Grenoble, France

Filed Oct. 11, 1972, Ser. No. 296,619
Claims priority, application France, Oct. 25, 1971, 71.38342
Int. Cl. H01h 5/00
U.S. Cl. 335—188 7 Claims



Automatic tripping electromagnetic contactor having a trip-free mechanism such as a collapsible spring leaf to open the contacts automatically under predetermined conditions. A lost motion connection between the armature of the electromagnet operating the contacts and the movable contact bypasses and overrides the trip-free mechanism to permit the electromagnet to open the contacts strikingly.

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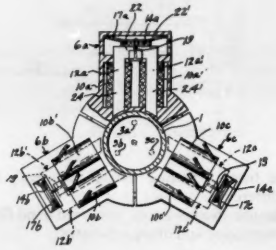
3,794,946

**TEMPERATURE COMPENSATED ELECTRON BEAM CONVERGENCE APPARATUS**

Maurice H. Brown, Palos Heights, Ill., assignor to Pemcor, Inc., Westchester, Ill.

Filed Nov. 2, 1972, Ser. No. 303,145
Int. Cl. H01f 3/12
U.S. Cl. 335—211 4 Claims



The gap of a pair of core members of a convergence unit for a color producing cathode ray tube is provided with a U-shaped, flux permeable, temperature compensating, magnetic member extending part way around the core members. The U-shaped compensating magnetic member has a bridging portion extending across the gap of the core members on the side thereof opposite the side on which a manually adjustable magnetic flux-producing member is located, and a pair of opposite legs extending across the gap on the adjacent sides of the core members.

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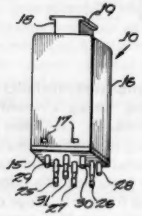
3,794,947

**LINE PROTECTOR FOR A COMMUNICATION CIRCUIT**

Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Oct. 6, 1971, Ser. No. 187,018
Int. Cl. H01h 79/00
U.S. Cl. 337—32 14 Claims



A plug-in line protector for a communications circuit provides protection for over voltage and over current conditions of the line. A cup and slug module containing carbon blocks provides an air gap for grounding high voltage transients. For an over current condition, a solder pellet melts causing the cup and slug to engage due to spring pressure and ground the line through a grounding strip. The grounding strip has plastic insulation bonded to a portion thereof and interposed between

the line and ground. In an over current condition heat from one of the carbon blocks is transferred through the cup to the metalic strip. This heat may cause the plastic to melt to provide a back-up or secondary low resistance path to ground. The protector may also have a resettable over current responsive mechanism in the form of a heat coil in the line. When the heat coil breaks, a printed circuit board, on which the heat coil is mounted, is moved by a volute spring. In over voltage and in over current conditions, the volute spring conducts current from the printed circuit board to the slug and cup and to ground.

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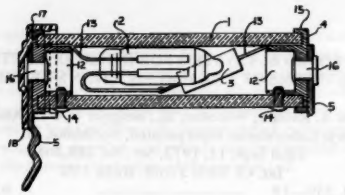
3,794,948

## BLOWN FUSE INDICATORS

John C. Linton, Potomac, and Gordon W. Berry, Beltsville, both of Md., assignors to Fuse Indicator Corporation, Rockville, Md.

Filed Oct. 2, 1970, Ser. No. 77,532
Int. Cl. H01h 85/32
U.S. Cl. 337—242 2 Claims



A dead front electrical blown fuse indicator for all standard cartridge enclosed fuses of both the ferrule and knife-blade types each comprising a casing or tube molded from insulating materials having an indicator lamp and contact terminal connected in series encased within the tube and said tube being opaque as to prevent the lamp and its electrical connections from being visible and yet being sufficiently translucent as to permit the lamp to glow over a wide area so as to be visible at all angles and at great distances from the tube. Resilient conductors electrically connected to said terminal for the lamp and each having a cantilever connection with the tube for causing the free ends of said resilient conductors to have a direct and positive snap-on electrical contact with the outer walls of the terminals of a fuse even when the fuse is subjected to undue vibration or shock. Said tube having sufficient tensile strength so as to prevent the bending or breakage of the tube due to its repeated application to and withdrawals from a fuse.

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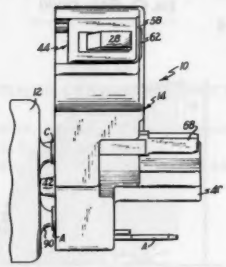
3,794,949

## SOLID STATE MOTOR STARTING APPARATUS

Odd Larsen, Kenyon, R.I., and Carl N. Johnson, Bridgewater, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 1, 1973, Ser. No. 328,553
Int. Cl. H01c 7/04
U.S. Cl. 338—22 R 15 Claims

A motor starting switch providing a predetermined time delay before permitting reenergization of a motor upon deenergization thereof comprises a generally cup-shaped casing having an open end adapted to receive a single or dual solid state starting elements. The dual elements are adapted to be coupled in series or parallel electrical circuit relation. An electrically conductive clip is disposed at the open end of the casing and provides electrical contact, serves as a casing half and maintains a mechanical bias on the solid state starting ele-



ments. The switch is provided with plug on terminals so that the switch can be directly plugged into a motor for starting thereof.

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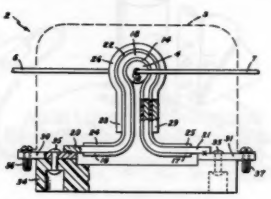
3,794,950

## OVERCURRENT PROTECTION SYSTEM AND SENSOR USED THEREWITH

Oliver H. Kilner, Warwick, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 103,406, Jan. 4, 1971, Pat. No. 3,697,863.
This application Mar. 13, 1972, Ser. No. 234,257
Int. Cl. H01c 7/04
U.S. Cl. 338—23 13 Claims



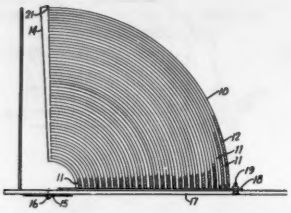
An overcurrent sensor adapted to cooperate with a controller to control the power to a load is shown. In the embodiment illustrated, the controller is an electrical switching means to which the overcurrent sensor furnishes a passive signal in the form of circuit resistance to cause the controller to operate to decrease or increase electrical power to the load circuit at desired current values. The overcurrent sensor comprises a PTC (Positive Temperature Coefficient) thermistor or an NTC (Negative Temperature Coefficient) thermistor mounted in heat transfer relation, through a layer of electrical insulation, with a first heater which is electrically connected in series with an electrical load, and a heat sink member mounted in heat transfer relation through a layer of electrical insulation with the series heater to provide means for changing the transient response time of the thermistor to the series heater current. A second heater is optionally mounted in shunt relation to the first heater to provide a means of increasing the steady state current at which the controller operates, above that obtained solely with the first heater while maintaining approximately unchanged the transient response time of the thermistor assembly for corresponding overload currents.

3,794,951

## ELECTRICAL CONNECTOR

Raymond Hansen, Elko, Nev., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,129
Int. Cl. H01r 39/00
U.S. Cl. 339—4 4 Claims



A multi-conductor electrical connector for bridging electrical circuits between a hinged door and the fixed door frame. The connector consists of one or more bare printed circuits in the form of concentric arcs mounted on the door, together with a fixed set of contact members mounted on the door frame such that each fixed contact member is in continuous electrical contact with one of the concentric arcs of the printed circuit.

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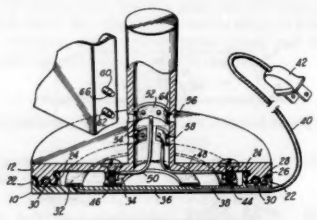
3,794,952

## LAZY SUSAN ASSEMBLY

James W. Dowis, 127 Cambridge Ct., Hampton, Ga. 30228

Filed Sept. 26, 1972, Ser. No. 292,392
Int. Cl. H01r 39/00
U.S. Cl. 339—5 P 12 Claims



A rotatable platform is provided with a centrally disposed stanchion and a number of electrical kitchen appliances are grouped about the stanchion in a circular array. The platform is rotatably supported from a base about the axis of the stanchion and electrical connection to the appliances may be completed by pushing them inwardly toward the stanchion. An electrical outlet plug and cord extends to the base and a pair of electrical conductor rings and brushes complete the connection between the base and the platform so that the platform may be rotated to any desired position without interrupting the electrical circuit.

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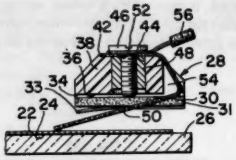
3,794,953

## ELECTRICAL TERMINAL FOR CONDUCTIVE FOIL

Jack Malin, Beechhurst, N.Y., assignor to Security Instruments, Inc., Bronx, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,562
Int. Cl. H01r 9/10
U.S. Cl. 339—17 C 7 Claims

An electrical terminal is disclosed that is adapted to be adhesively retained upon a smooth surface such as glass. The terminal contains a flat generally U shaped spring member encircling a cooperating insulator block member. The spring member completes an electrical path to a frangible conductive tape carried by the glass from an electrically conductive wire held in intimate contact with the spring member by screws.



The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured by the claims, not is it intended to be limiting as to the scope of the invention in any way.

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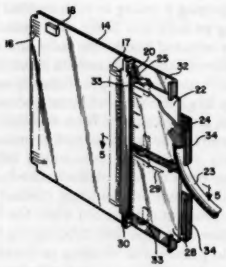
3,794,954

## IMPROVED BUS SYSTEM FOR INTERCONNECTING SUBSYSTEMS OF A COMMUNICATION SWITCHING SYSTEM

William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 11, 1972, Ser. No. 288,201
Int. Cl. H01r 31/08; H05k 1/02
U.S. Cl. 339—19 6 Claims



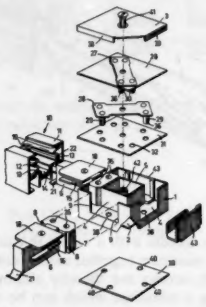
A bus system arranged such that the number of interconnection points between subsystems or modules are substantially reduced so that interfacing costs likewise are reduced. The multiple for continuing the bus is located on an interface connector card which provides an interfacing between the bus cable and the subsystem or module, so that the continuity of the bus can be maintained, regardless of the system status of any subsystem or subsystems. Normally, with other similar bus systems, the continuity of the bus is disrupted if a subsystem is taken out of service. Furthermore, unlike many other bus systems, the bus can be extended in vertical and/or horizontal directions. The bus system also is such that the bus can be easily terminated by simply inserting a terminator card on the interface connector card, or it can be extended by withdrawing the terminator card and plugging in a bus jumper cable with a terminator card at the last module.

3,794,955

## CONNECTOR

Johannes Kurt Bertrams, Mozartstrasse 30, Hilden, Germany

Filed Oct. 19, 1972, Ser. No. 299,045
Claims priority, application Netherlands, Oct. 27, 1971, 7114769
Int. Cl. H01r 9/00
U.S. Cl. 339—21 R 5 Claims



The invention relates to a connector for mechanically and electrically coupling current rails. The connector has a number of coupling members which can each be clamped in a current rail and a number of plates which are electrically insulated from each other. Each plate is connected by means of a plug contact to a lead-through element which is incorporated in the coupling member and which can be clamped against one of the current conductors of the current rail.

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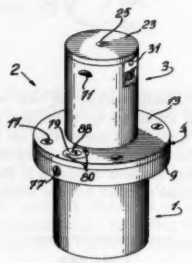
3,794,956

## RECESSIBLE ELECTRIC FLOOR OR THE LIKE OUTLET ASSEMBLY

Real Rober Dubreuil, 10660 Papineau St., Montreal, Quebec, Canada

Filed June 30, 1972, Ser. No. 268,065
Int. Cl. H01r 13/46
U.S. Cl. 339—34 14 Claims



A retractable electric floor outlet assembly formed of telescopic inner and outer members, the inner member being movable between an operative extended position to an inoperative retracted position; the members terminating at one end with flat transverse surfaces becoming flush with one another when the members are in inoperative position. A lock is provided to hold the inner member inside the outer one in inoperative position of the assembly. The lock is releasable to allow the inner member to extend out of the outer member under the bias of a spring mounted therebetween. A circuit braker is formed between the two members to make an electrical junction when the members are in operative position and to brake it when the members are in inoperative position. O-ring seals on the members prevent entry of water in the outlet member.

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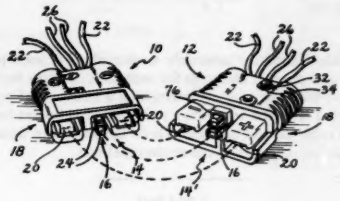
3,794,957

## PLURAL-POLED, GENDERLESS ELECTRICAL CONNECTOR

Edward D. Winkler, Reading, Mass., assignor to Anderson Power Products, Inc., Boston, Mass.

Filed Jan. 22, 1973, Ser. No. 325,448
Int. Cl. H01r 25/00
U.S. Cl. 339—49 R 9 Claims



A plural-poled, genderless electrical connector having main and auxiliary contacts which telescopically engage with counterpart contacts on an identical connector. The contacts are arranged to provide a make first-break last electrical connection sequence for the main contacts and a make last-break first electrical contact sequence for the auxiliary contacts. A staggered peak insertion force load is obtained from a predetermined physical placement of the contacts within the connector.

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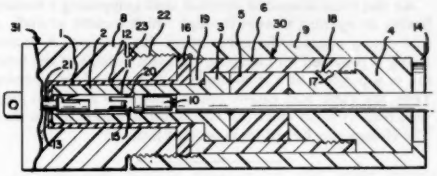
3,794,958

## HIGH VOLTAGE CONNECTOR

Douglas Wade Glover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 19, 1972, Ser. No. 263,839
Int. Cl. H01r 13/52
U.S. Cl. 339—94 R 3 Claims



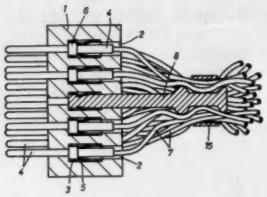
The disclosure relates to a high voltage connector, capable of being installed in the field, which displays minimal corona problems. The connector includes a pressure seal at both the wire-connector interface and the male connector-female connector interface with the elimination of voids or air pockets during assembly. The connector is installed without requirement for adhesion, potting or bonding and thereby eliminates the need for extreme process controls.

3,794,959

## CABLE CONNECTOR WITH STRAIN RELIEF

Gerd Kamolz, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,443
Int. Cl. H01r 13/58
U.S. Cl. 339—103 M 7 Claims



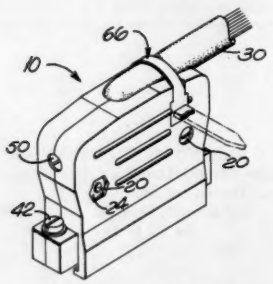
A cable connector assembly is provided. It incorporates cavities and contact elements for terminals of wires forming a cable and includes a cavity into which a strain relief rod may be inserted. The rod supports a pair of spaced bosses between which a cable tie can be used to hold the wires and thus translate strain on the wires to the strain relief rod.

3,794,960

## JUNCTION SHELL

Joseph Sugar, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,924
Int. Cl. Ho1r 13/58
U.S. Cl. 339—107 4 Claims



An electrical connector junction shell comprising a housing having an opening therein through which a cable extends. A first clamp engages the cable inside the housing. A second clamp is provided for clamping the cable outside of the housing in a position at a right angle to the axis of the opening. Thus, the cable may extend either straight or at a right angle with respect to an electrical connector mounted in the shell. The clamps may be self-locking cable ties.

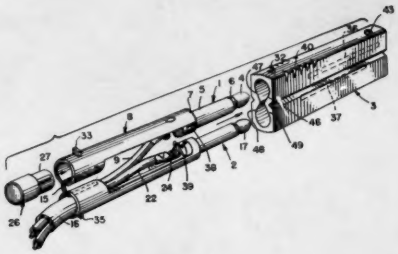
3,794,961

## ELECTRICAL TWIN PLUG

James R. Bailey, Chicago, and Vernon W. Lavigne, Rolling Meadows, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 108,792, Jan. 22, 1971, abandoned. This application May 3, 1971, Ser. No. 139,339
Int. Cl. H01r 13/00
U.S. Cl. 339—108 R 5 Claims

An electrical twin plug useful in communication, patching, and for other purposes is constructed with a removable handle which is interlocked with the plug bodies and can be removed to expose the terminals within the plugs merely by pressing inwardly at the interlocking means and pulling axially. The handle and plug bodies can then be reassembled by aligning an interior boss of the handle with a recess in each plug body and pressing the two members together axially until they are interlocked. Assembly screws are thereby eliminated and a very narrow twin plug is obtained which can be mounted side by side with other plugs.

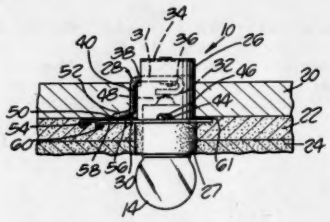


3,794,962

## CEILING LAMP MOUNTING

Merlin Wayne Clark, 35426 Carter St., Yucaipa, Calif. 92399

Filed June 2, 1972, Ser. No. 259,228
Int. Cl. H02b 1/02
U.S. Cl. 339—126 R 8 Claims



A bayonet type lamp socket for use with several such sockets randomly mounted in a ceiling to provide room lighting or a starlight effect depending on varying intensity, which has a tubular body portion, supporting flange member and a spring contact element mounted in the body portion in providing an external contact for the wiring together of the several sockets.

3,794,963

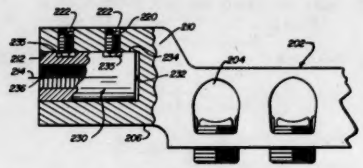
## ELECTRICAL CONNECTOR

James Joseph Cooper, Jr., St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 71,772, Sept. 14, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 246,836
Int. Cl. H01r 33/00
U.S. Cl. 339—242 6 Claims

A connector is disclosed which permits electrical connection from a threaded stud such as used on transformer applications for power distribution to a plurality of secondary cables or the like. A conductive pad or adapter threaded at one end to receive the stud is mounted removably to the connector to

position the connector normal to the stud. By providing a removable adapter, the adapter to connector attachment can be released without the necessity of disconnecting any secondary or service conductors from the connector.



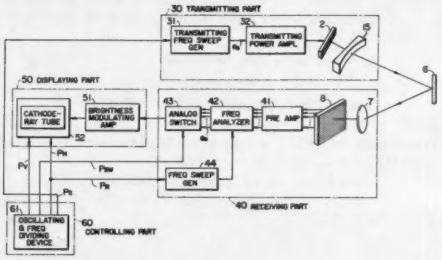

## ERRATUM

For Class 340—172 see:
Patent No. 3,794,831

## 3,794,964
## ULTRASONIC IMAGING DEVICE

**Kageyoshi Katakura, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan**

**Filed May 25, 1972, Ser. No. 256,849**
**Claims priority, application Japan, May 30, 1971, 46/37266; Jan. 12, 1972, 47/5192**
**Int. Cl. G01s** *9/66*
**U.S. Cl. 340—1 R** **9 Claims**



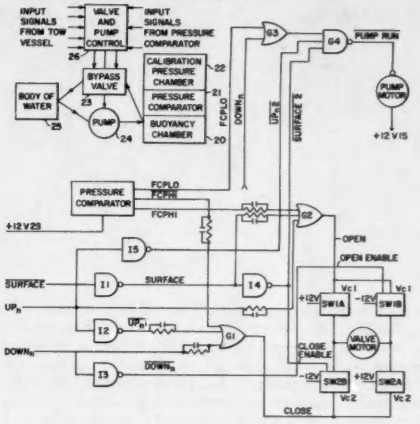

An ultrasonic imaging device comprising a transmitting transducer which is rectilinearly arranged and which transmits acoustic waves of input signal frequencies to a target object in directions corresponding to said frequencies, an acoustic lens which converges reflected acoustic waves from said target object, and a receiving transducer which is divided in a direction orthogonal to the scanning direction of said acoustic lens, each divided part constituting a receiving element, and which receives the acoustic waves converged by said acoustic lens.

## 3,794,965
## MARINE SEISMIC CABLE BUOYANCY SYSTEM

**Charles J. Charske, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.**

**Filed Sept. 18, 1972, Ser. No. 289,928**
**Int. Cl. B63b** *21/56;* **H01b** *7/12;* **G01v** *1/16*
**U.S. Cl. 340—7 PC** **20 Claims**

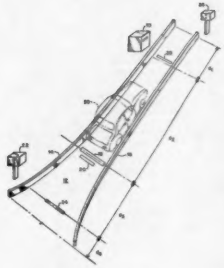
The buoyancy of a marine seismic cable is controlled by transferring water into and out of individual buoyancy units located between sections of the cable. Each buoyancy unit includes a chamber containing a confined gas maintained at a pressure greater than ambient water pressure, a pump for introducing water into the chamber, and means for expelling water as necessary. A control system which permits both manual and automatic adjustments of the cable buoyancy is provided. This makes possible the towing of the cable at essentially constant depths behind an initial cable section fitted with a depth controller.




## 3,794,966
## AUTOMATIC VEHICLE CLASSIFICATION AND TICKET ISSUING SYSTEM

**Michael M. Platzman, 541 Green Pl., Woodmere, N.Y. 11598**

**Filed May 1, 1972, Ser. No. 249,068**
**Int. Cl. G08g** *1/015*
**U.S. Cl. 340—31 R** **17 Claims**

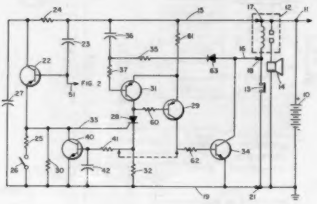


An automatic vehicle classification and ticket issuing system for vehicle toll facilities having a ticket issuing device alongside a discretely identified single lane, single feed entering lane. A detector spaced from the ticket issuing device detects characteristics of the vehicle and based upon these characteristics, a control system classifies the vehicle and has the ticket issuing device issue an appropriate ticket. The control system has a memory capability so that it can store the classifications of a number of successive vehicles and appropriately issue the tickets. Vehicle detection and barrier devices control the flow of traffic to properly space the vehicles for proper operation of the system.

## 3,794,967
## INTRUDER ALARM FOR AUTOMOBILES

Laurence A. Fischer, 20 Arden Dr., Hartsdale, N.Y. 10530

Filed Aug. 3, 1972, Ser. No. 277,684
Int. Cl. B60r 25/10
U.S. Cl. 340—63 6 Claims

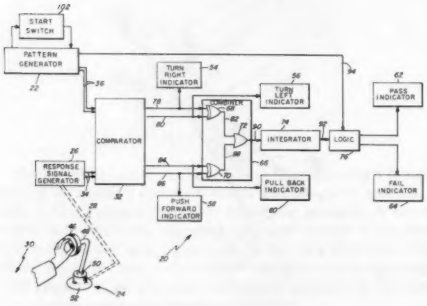


An intruder alarm particularly suited for installation in an automobile. The alarm includes a transistor connected to the A-line of an automobile electrical system in an inverse manner, i.e., emitter-base reverse biased, to detect A-line transients. The sensor can be made sensitive to body contact by wiring to insulated portions of the automobile or to a pressure sensitive capacitor. A latching circuit, controlled by the sensor, actuates the automobile horn whenever the sensor detects an A-line transient or is otherwise disturbed by an intruder. Timing circuits modify the horn action so that an alarm signal is distinguishable from a fault in the horn circuit.

## 3,794,968
## ANALYZER FOR COMPARING THE RESPONSE OF AN ORGANISM TO A REFERENCE PATTERN

Lyle M. Hill, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 11, 1972, Ser. No. 287,960
Int. Cl. G08b 21/00
U.S. Cl. 340—52 R 29 Claims

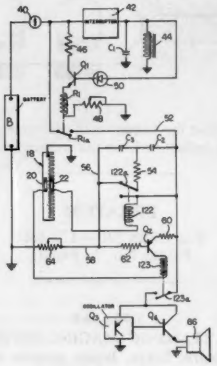



A system for testing the reaction of a human subject to a test stimulus for ascertaining the fitness of the human subject for performing a specific task, in particular, the driving of an automobile under the influence of alcohol. The test utilized in the preferred embodiment of the invention requires a human subject to monitor the magnitude of a quantity (such as the length of a line) which changes at a nonuniform predictable rate utilizing information provided by minimal cues, in particular, a pair of flashing lights which indicate whether the rate of change is being overestimated or underestimated. Circuitry for building a test device, as well as interlocking such a device with the ignition system of an automobile, are also disclosed.

## 3,794,969
## APPARATUS FOR ALERTING VEHICLE DRIVER

Floren R. Klopfenstein, 9754 Diebold, Fort Wayne, Ind. 46825, and Gene J. Duff, Box 307, Willshire, Ohio

Filed Jan. 22, 1973, Ser. No. 325,920
Int. Cl. G08b 21/00
U.S. Cl. 340—52 R 13 Claims

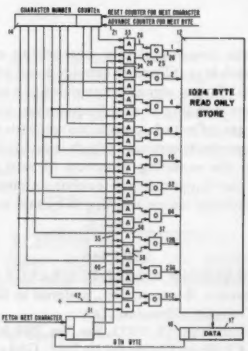


An apparatus for alerting the driver of a vehicle when the steering wheel is not moved in a normal manner in which a detector is provided which detects movements of the steering wheel as little as 2° when the steering wheel is within normal generally straight ahead driving range with the detector operating time delay means which cause an alarm to emit a signal if the steering wheel is not moved at least about 2° in a certain interval of time.

## 3,794,970
## STORAGE ACCESS APPARATUS

Kenneth A. Pearson, Kingston, and Gordon M. Zook, Germantown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,387
Int. Cl. G06f 7/00, 15/00; G11c 7/00
U.S. Cl. 340—172.5 9 Claims




In a circuit for addressing a data store with an address having a portion identifying a character location having several byte locations and a portion identifying one of the bytes within the addressed character location, means is provided for addressing a number of bytes per character that is not an integral power of 2. The two address portions are used conventionally

for addressing a first part of the store in which the number of byte positions for each character is an integral power of 2. A second part of the store holds the next byte position for each character and is addressed by the combination of a set of fixed address bits and the character portion of the address used for addressing the first part of the store.

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**3,794,971**

## VEHICLE SPEED SENSING DEVICE

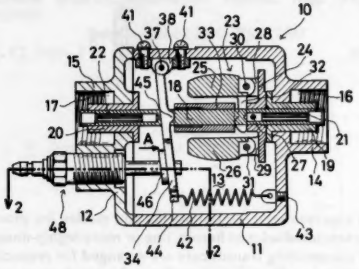
**Takashi Hida, Toyota; Naoji Sakakibara, Chiryu, and Nobuyuki Hashimoto, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan**

**Filed Aug. 25, 1972, Ser. No. 283,760**

**Claims priority, application Japan, Sept. 10, 1971, 46-070571**

**Int. Cl. B60q** *1/54*

**U.S. Cl. 340—53** **10 Claims**




A speed sensing device for a vehicle comprising a governor means movable proportional to vehicle speed, a lever pivotally mounted on a housing of the device at one end thereof so as to oscillate in response to movement of the governor means, permanent magnet means secured to the other end of the lever and reed switching means secured to the housing and adapted for cooperating with the magnet means being displaced with the lever to thereby sense the vehicle speed.

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**3,794,972**

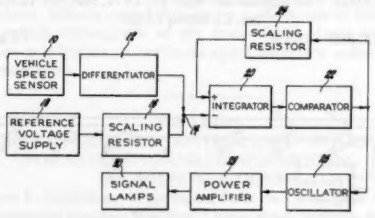
## DECELERATION SIGNALING APPARATUS HAVING VELOCITY AND DECELERATION DEPENDENT SIGNAL

**David L. Van Ostrom, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.**

**Filed Jan. 12, 1973, Ser. No. 323,034**

**Int. Cl. B60q** *1/44*

**U.S. Cl. 340—62** **2 Claims**




A deceleration signaling apparatus is provided for comparing actual vehicle deceleration with a reference deceleration and, when the actual vehicle deceleration exceeds the reference deceleration, integrates the net difference to generate a signal representing the difference between the actual vehicle velocity and a reference velocity determined by the reference deceleration. Means are provided for energizing signal lamps for providing deceleration warning while this velocity difference exceeds a predetermined constant. The comparator also functions to shift the magnitude of the reference deceleration from a first level to a second level less than the first level when the difference between the actual vehicle velocity and the reference velocity exceeds the predetermined constant so as to extend the duration of the deceleration warning.

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**3,794,973**

## METHOD OF ERROR DETECTION IN PROGRAM CONTROLLED TELECOMMUNICATION EXCHANGE SYSTEMS

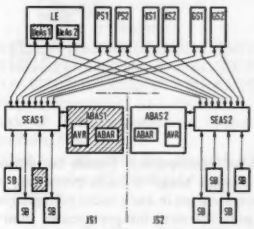
**Josef Huber, and Ulrich Lenz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed July 12, 1971, Ser. No. 161,617**

**Claims priority, application Germany, July 10, 1970, P 20 34 423.4**

**Int. Cl. G05b** *23/02*; **G06f** *11/04*

**U.S. Cl. 340—146.1 BE** **3 Claims**




A method is described for accomplishing the diagnosis of errors in modular constructed, program controlled data exchange systems. The method contemplates the use of a specific program for error diagnosis. Redundance of the system is increased when several operating units in the system operate together in a cyclic fashion with central memories. When a particular unit of the system is recognized as malfunctioning, it is placed in a diagnosis state, and during the continuance of this state, the malfunctioning unit is active only for special test processes run under the control of the diagnostic program utilizing properly functioning units in the system. In carrying out the dianostic program, the properly functioning units are placed in the diagnostic state either constantly or at least for the duration of an operating cycle, as needed. A central sequence demand control, which receives, assigns and selects sequence requirements sent by the units of the system, is placed in a diagnostic state for running the diagnostic program in conjunction with the malfunctioning system unit now placed in the diagnosis state, along with a properly functioning program control unit for controlling the sequence and a properly functioning storage element. The sequence demand control operates in such a manner during the diagnosis state such that only particular cycle-related sequence demands of those units which are at the time in the diagnosis state are considered.

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**3,794,974**

## DIGITAL FLOW PROCESSOR

**William Henn, Lexington, and Richard Serwetman, Medford, both of Mass., assignors to Raytheon Company, Lexington, Mass.**

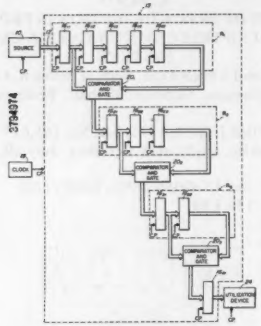
**Filed Oct. 13, 1972, Ser. No. 297,534**

**Int. Cl. 328** *37*; **G06f** *7/02*

**U.S. Cl. 340—146.2** **3 Claims**

An apparatus is disclosed for determining the maximum (or minimum) of a group of the most recent digital numbers sequentially applied thereto. The apparatus includes a first register $R_1$, having a number of storage stages. The first register

is coupled to a source of the digital numbers. The number of storage stages in such first register is equal to the next integer greater than half the desired number, N, of samples in the group. Each one of a number of succeeding registers, $R_2$-$R_n$, is connected to its preceding register by a comparator means.




The inputs of such comparator means are connected to the first and last storage stage in such preceding register. The number of storage stages in each succeeding register, $R_2$-$R_n$, is equal to one plus the next integer greater than $(N-2^{n-1})/2^n$ where n is the number of the register.

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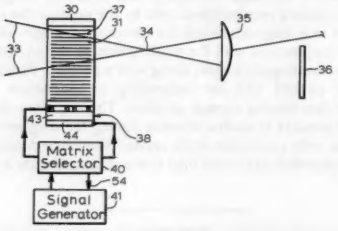
**3,794,975**

## SYSTEM FOR TRANSLATING SOUND-BORNE CHARACTER OR PATTERN INFORMATION INTO OPTICAL FORM

**Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed Jan. 3, 1972, Ser. No. 214,977**
**Int. Cl. G06k** *9/00*
**U.S. Cl. 340—146.3 F** **22 Claims**



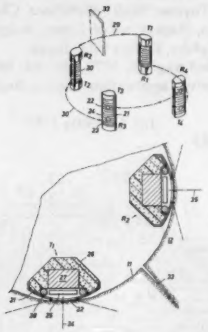

In a light-sound interaction cell, a plurality of spatially separated individual acoustic transducers are selectively energized to form a sound image of a character or other spatial pattern. A beam of light is projected through the light-sound interaction cell, the light being diffracted by the acoustic field established by the transducers. A Bragg image of that field is formed and projected upon an image plane to reproduce optically in the image plane an image of the desired pattern.

**3,794,976**

## METHODS AND APPARATUS FOR ACOUSTICALLY INVESTIGATING EARTH FORMATIONS USING SHEAR WAVES

**Brian E. Mickler, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.**

**Filed May 30, 1972, Ser. No. 257,748**
**Int. Cl. G01v** *1/40*
**U.S. Cl. 340—15.5 BH** **44 Claims**



In the representative embodiments and modes for practicing the invention disclosed herein, one or more highly-damped acoustic transmitting transducers are arranged for respectively subjecting an adjacent wall surface of a borehole to an almost-instantaneous burst of acoustic energy having a duration which is so short that it may be considered to be a single impulse of acoustic energy in the borehole environment for propagating acoustic shear waves through the formation for reception by a broad-band acoustic receiving transducer disposed adjacent to a remote wall surface of the borehole. The electrical signals produced by these shear waves are processed to obtain measurements which are characteristic of anomalies such as fractures in the earth formation traversed by the acoustic waves.

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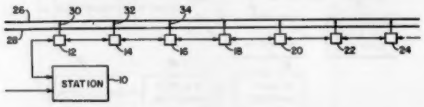
**3,794,977**

## MULTIPLEX CONTROL SYSTEM FOR CONTROLLING THE OPERATION OF A PLURALITY OF STATIONS

**George M. Thorne-Booth, Tarzana, Calif., and Robert C. Hoyler, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Division of Ser. No. 762,563, Sept. 25, 1968, Pat. No. 3,593,022. This application Mar. 11, 1971, Ser. No. 123,258**
**Int. Cl. H04q** *11/00*
**U.S. Cl. 340—163 R** **7 Claims**




A train control signalling system is provided for train speed command signals and train position detection signals which system is operative in a fail-safe manner with a plurality of isolated track circuit blocks. For a given train system, a plurality of wayside stations is provided, with each station being operative through a limited number of conductors to energize a predetermined number of track circuit blocks. Each station includes a crystal controlled signal generator to assure an accurate coherent base frequency control of the communicated signals and provide control signals for the signal communica-

tion operation relative to each station to thereby control, in effect as an extension of the crystal control concept, accuracy to each of the associated track circuit blocks.

Up to 32 separated track circuit block locations receive information from each wayside station, for this particular system as described, over a common time division multiplexed signalling system, so it is necessary that each location receive its particular information only at the correct time period. This is accomplished by an appropriate control signal sent for this purpose to each track circuit block location.

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**3,794,978**

## SYSTEMS FOR THE TRANSMISSION OF CONTROL AND/OR MEASUREMENT INFORMATION

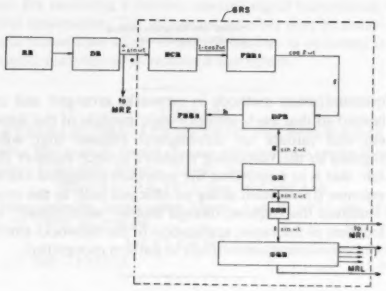
**Philippe Staron, Ris Orangis, France, assignor to Compagnie Generale De Geophysique, Paris, France**

**Filed Aug. 20, 1971, Ser. No. 173,505**

**Claims priority, application France, Aug. 25, 1970, 7031056**

**Int. Cl. G08c** *25/00*; **H04l** *7/08*

**U.S. Cl. 340—170** **10 Claims**



Apparatus for and method of synchronous transmission of digital control and/or measurement information over a high frequency transmission link with high reliability. A predetermined number of known pseudo-random sequences of selected duration are generated synchronous with a low-frequency sinusoidal subcarrier, each representing one datum of digital information. These sequences are used to phase-reversal modulate the subcarrier which in turn modulates a high-frequency carrier. A receiver demodulates the signal, restoring the original series of pseudo-random sequences. The same pseudo-random sequences as are generated in the transmitter are independently generated in the receiver and are phase-locked and individually compared with each restored sequence. When a correlation is found, the datum of information which corresponds to the transmitted pseudo-random sequence is known. A preferred application is to seismic experimentation.

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**3,794,979**

## MICROPROGRAMMED CONTROL UNIT WITH MEANS FOR REVERSING AND COMPLEMENTING MICROINSTRUCTIONS

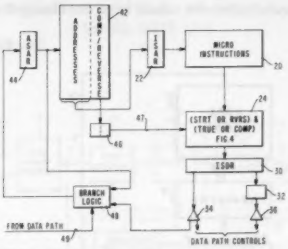
**Robert F. McMahon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Filed Mar. 2, 1973, Ser. No. 337,490**

**Int. Cl. G06f** *9/16*

**U.S. Cl. 340—172.5** **10 Claims**

A microprogrammed control unit comprising an instruction memory for storing microinstructions and an address memory for storing the addresses of microinstructions which make up a microprogram. Each microinstruction within the instruction memory can be transmitted to an instruction data register in any of various formats. In the preferred embodiment, the microinstruction can be in one of four forms: unchanged; reversed; complemented; or reversed and complemented. Since each microinstruction within the instruction memory



can be transmitted to the data register in any of these four forms, the number of microinstructions that must be stored in the instruction memory is substantially reduced.

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**3,794,980**

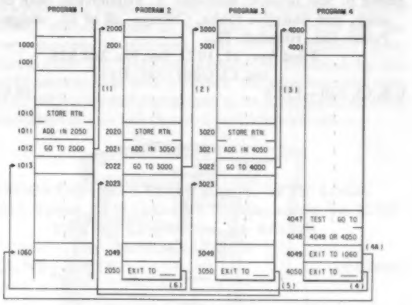
## APPARATUS AND METHOD FOR CONTROLLING SEQUENTIAL EXECUTION OF INSTRUCTIONS AND NESTING OF SUBROUTINES IN A DATA PROCESSOR

**George R. Cogar, Frankfort, and Arnold G. Huyck, Middleville, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.**

**Filed Apr. 21, 1971, Ser. No. 136,054**

**Int. Cl. G06f** *9/12*

**U.S. Cl. 340—172.5** **14 Claims**



A stack pointer for identifying one of a group of instruction word address registers in a data processor. To fetch new instruction, the stack pointer is examined to identify the instruction word address register to be used. The address contained in this register is then incremented to derive the address of the new instruction to be executed. A branch instruction causes the stack pointer to be incremented and the base address of the new subroutine to be loaded into the instruction word address register newly identified by the stack pointer. An exit instruction causes the stack pointer to be decremented. Exit-and-branch instructions are possible because the stack pointer counts in a closed loop in both directions, there being no "-first" or "last" instruction word address register.

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**3,794,981**

## REALTIME COMPUTER OPERATION

**Daniel G. O'Connor, Endwell, N.Y., assignor to The Singer Company, Binghamton, N.Y.**

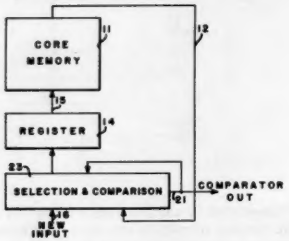
**Filed June 2, 1972, Ser. No. 258,997**

**Int. Cl. G06f** *7/04*

**U.S. Cl. 340—172.5** **4 Claims**

In realtime systems which are controlled by digital computers, information is updated at prescribed time intervals re-

gardless of whether or not there have been changes in the input values. This specification discloses a system for comparing the new values with the previous values for the same quantities and for reducing or eliminating computations performed by the computer when the values have not changed more than




the prescribed amount. A digital comparator compares the old value from memory with the new value being transmitted to memory. When the difference between the two is within a prescribed amount, the output of the comparator signals the computer to ignore that computation and proceed to the next step.

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**3,794,982**

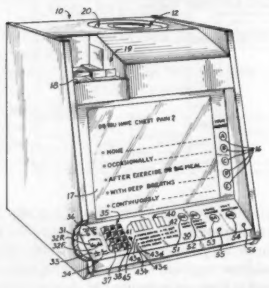
**DATA ACQUISITION DEVICE**

**James B. McCormick; Radoslav T. Mijanovich, both of Hinsdale, and Shunjiro Ohba, Chicago, all of Ill., assignors to Pelam, Inc., Hinsdale, Ill.**

**Filed Apr. 17, 1972, Ser. No. 244,825**

**Int. Cl. G06f** *3/08, 3/14*

**U.S. Cl. 340—172.5** **16 Claims**



A data acquisition device for recording information supplied by an operator in response to a plurality of questions visually presented to the operator in a predetermined sequence has a slide projector and mirror system for visually displaying a sequence of slides on a screen readily observable by the operator. Each slide bears an image frame having a question, multiple-choice answers, and an identification code photographically recorded thereon. The operator selects and actuates a switch corresponding to the desired answer and the device automatically records information corresponding to the answer on a punch card at the location or column on the card associated with the particular frame being projected. Digital logic is utilized to compare the identification code with the card column to synchronize the visual display with the punch card recording of the answers, as well as to provide safety features which render the operation of the device relatively foolproof.

**3,794,983**

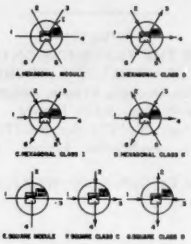
**COMMUNICATION METHOD AND NETWORK SYSTEM**

**Kenan E. Sahin, 711 N. East St., Amherst, Mass. 01002**

**Continuation-in-part of Ser. No. 186,488, Oct. 4, 1971, which is a continuation-in-part of Ser. No. 819,395, April 25, 1969, abandoned. This application Apr. 17, 1973, Ser. No. 351,872**

**Int. Cl. H04b** *1/38;* **G06f** *13/00*

**U.S. Cl. 340—172.5** **22 Claims**



SQUARE AND HEXAGONAL MODULE CHANNEL ARRANGEMENTS

Communication methods in networks arranged and interconnected so that each memory-logic module of the network system can initiate an information request that will be propagated to the remaining modules in such manner that a module that is to respond to the information request can have its response transmitted along an efficient path to the module that initiated the request, though totally "uninformed" as to the location of the same; application of the networks embodying the communication methods to pattern recognition.

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**3,794,984**

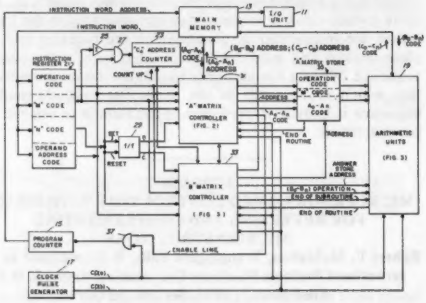
**ARRAY PROCESSOR FOR DIGITAL COMPUTERS**

**Alan J. Deerfield, Newtonville, and Stanley M. Nissen, Billerica, both of Mass., assignors to Raytheon Company, Lexington, Mass.**

**Filed Oct. 14, 1971, Ser. No. 189,291**

**Int. Cl. G06f** *7/00, 7/38, 9/00*

**U.S. Cl. 340—172.5** **6 Claims**



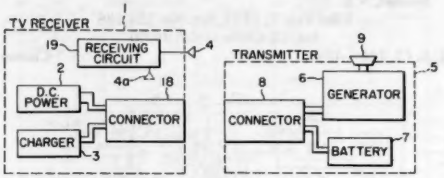

A digital computer adapted to perform vector and matrix operations without detailed programs is disclosed. The dimensions of matrices or of vectors are entered as codes in reserved fields in successive instruction words and the computer's processor is made to be responsive to such codes to perform any required operations on the matrices or vectors to be processed.

3,794,985

## REMOTE CONTROL OF A RECEIVER

Yoshito Dezaki, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 25, 1972, Ser. No. 256,773
Claims priority, application Japan, May 31, 1971, 46/45473
Int. Cl. H04q 1/00
U.S. Cl. 340—171 R 2 Claims




A wireless remote control for a television receiver. The television receiver or controlled system is provided with means for receiving a remote control signal transmitted by a control transmitter. The television receiver may be controlled by said transmitter either if the transmitter is mounted in the television receiver or is removed therefrom.

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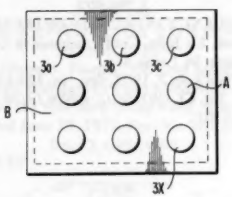
3,794,986

## PYROELECTRIC ELEMENT OF POLYMER FILM

Naohiro Murayama, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1972, Ser. No. 242,448
Claims priority, application Japan, Apr. 8, 1971, 46-21374; Apr. 27, 1971, 46-27159
Int. Cl. G11c 13/02
U.S. Cl. 340—173 CH 5 Claims




A pyroelectric element comprising a polymer film which can be converted into pyroelectric substance, the polymer film having a pyroelectric distribution along its surface. The process of producing such a film comprising:

poling desired local portions of the film while varying either the temperature and/or the electric potential of localized areas of the film;

a further process of producing such a pyroelectric element wherein a definite pyroelectricity is provided to the surface of the polymer film and then a non-uniform distribution of pyroelectricity is provided by locally reducing or eliminating the pyroelectricity;

a process of storing and reproducing signals in such a pyroelectric element comprising:

storing polarization signals of different pyroelectricities in different portions of such an element, and then

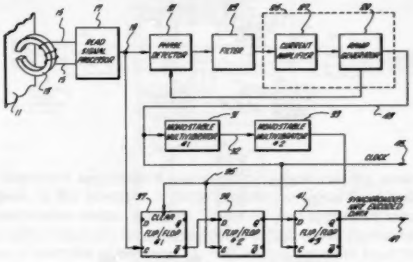
delivering the signals as a polarization change due to a temperature change.

3,794,987

## MFM READOUT WITH ASSYMETRICAL DATA WINDOW

Ivan Earl Walenta, Westlake, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1972, Ser. No. 302,915
Int. Cl. G11b 5/02
U.S. Cl. 360—43 10 Claims




In the data retrieval system utilizing a recording medium with digital data encoded in accordance with a modified frequency modulation (MFM) encoding scheme, an encoded data detection method and apparatus utilizes an assymetrical data window, the longer time period window for the binary "one" information, to retrieve the recorded data. The length of this longer time period window and its occurrence in time is selectively adjusted until a minimum error ratio for the recovery process is obtained. The MFM encoded data, recovered from the recording medium is detected by the skewable assymetrical data windows, the detected data converted to NRZ encoded digital data to be supplied to an NRZ discrimination circuit and then to a utilization circuit.

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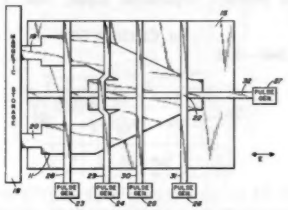
3,794,988

## PROGRAMMABLE ELECTROMAGNETIC LOGIC

Ronald S. Entner, 8148 Lake Park Dr., Alexandria, Va. 22309

Filed July 22, 1969, Ser. No. 846,299
Int. Cl. G11c 11/14
U.S. Cl. 340—174 TF 15 Claims

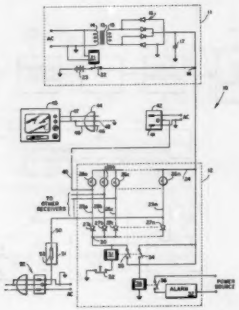



Performance of logic functions disclosed is accomplished by a thin film programmable configuration that can be programmed to function either as an AND or an OR gate. The arrangement of a plurality of these logic structures into a matrix configuration is accomplished by the use of a thin film technology. The very simple basic thin film logic device is not restricted to use in a matrix configuration but, may be used in any suitable configuration or manner that is especially adaptable to thin film construction.

## 3,794,989
## APPLIANCE THEFT ALARM SYSTEM

William T. Manley, 1825 Rockland Dr., S.E., Atlanta, Ga. 30316, and Emory T. Manley, 2898 Parkridge Dr., N.E., Atlanta, Ga. 30319

Filed Apr. 7, 1972, Ser. No. 242,033
Int. Cl. G08b 21/00
U.S. Cl. 340—280 9 Claims

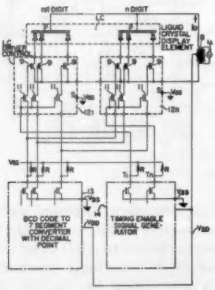


Alarm system for indicating unauthorized disconnection of an appliance such as a TV receiver or the like. The alarm system includes an indication device, such as a lamp, connected in series with a signal apparatus to receive a source of operating power. A shunt circuit including the appliance circuit or other circuit being monitored is connected to bypass the signal apparatus, so that current normally flows through the indication device and the shunt circuit to operate the indication device when the monitored circuit is uninterrupted. Opening of the monitored circuit, such as by unauthorized disconnection of a TV receiver, opens the shunt circuit and permits current to flow through the signal apparatus, initiating an appropriate alarm or other signal. The current flowing through the series circuit may be less than the amount necessary to produce the indication normally present while the monitored circuit is uninterrupted.

## 3,794,990
## SYSTEM FOR DRIVING LIQUID CRYSTAL DISPLAY DEVICE

Juji Kishimoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 11, 1971, Ser. No. 197,896
Claims priority, application Japan, Nov. 17, 1970, 45-101620
Int. Cl. G08b 5/36
U.S. Cl. 340—336 6 Claims

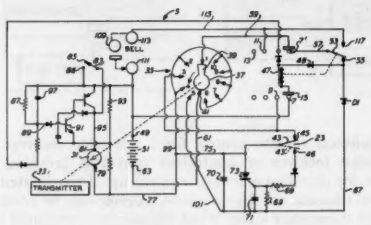

1st DIGIT
n DIGIT
LIQUID CRYSTAL DISPLAY ELEMENT
BCD CODE TO 7 SEGMENT CONVERTER WITH DECIMAL POINT
TIMING ENABLE SIGNAL GENERATOR

A liquid crystal display device is driven by alternating current applied thereto by a switching circuit comprising a group of MOS transistors. The transistors are switched in response to display signals applied to the respective gate electrodes by a control circuit such as the output circuitry of a computer.

## 3,794,991
## ALARM SYSTEM WITH TIMED EXIT CIRCUIT MEANS

Leo Guthart, Old Westbury, N.Y., assignor to Alarm Device Manufacturing Company, a division of Pittway Corporation, Syosset, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,186
Int. Cl. G08b 13/08, 29/00
U.S. Cl. 340—409 7 Claims

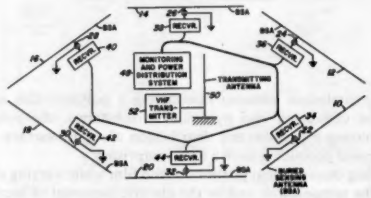



An intruder-activated alarm system operating pursuant to the McCullough loop principle. The system includes a protected circuit incorporating an exit means-controlled switch. Arming means for the protected circuit includes a delay circuit for suspending activation of the protected circuit for a predetermined period. Subsequent to such period, opening and closing of said exit means-controlled switch causes a motor to successively cycle and drive a coded transmitter which sends two rounds of signals to a central office. Subsequent disruption of the protected circuit causes further operation of said motor, which in turn effects transmission of alarm signals to said central office.

## 3,794,992
## RADIO FREQUENCY INTRUSION DETECTION SYSTEM

John B. Gehman, La Jolla, Calif., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Feb. 7, 1972, Ser. No. 224,130
Int. Cl. G01s 9/02; G08b 13/26
U.S. Cl. 343—5 PD 24 Claims

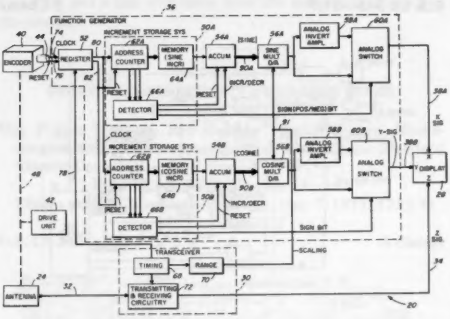



In order to detect personnel and other intruding objects in open terrain, one or more long wire antennas are buried in the ground and located orthogonal to a vertically polarized souce of VHF radiation, such as a continuous wave transmitter which feeds an elevated vertical dipole. The intruder couples the radiation to the buried antenna which feeds a receiver. The receiver produces an output responsive to the characteristics of the radiation coupled to the antenna by the intruder to produce an alarm indicative of the presence of the intruder.

## 3,794,993
## COORDINATE GENERATION SYSTEM

Daryl J. Christopher, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 22, 1972, Ser. No. 265,121
Int. Cl. G01s 7/12
U.S. Cl. 343—5 DP 24 Claims

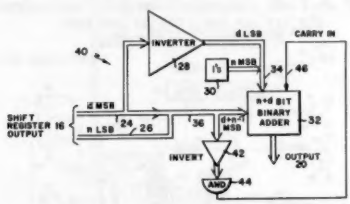


A coordinate generation system providing deflection signals for the X and the Y coordinates of an oscilloscope type display for producing a line on the display having a direction synchronized with a source of direction. Such a source of direction is typically a radar antenna in which case the line produced on the display is directed in the direction of the antenna such as in a plan position indicator (PPI). The coordinate generation system utilizes a sequence of pulses, each of which indicates a predetermined incremental change in the direction of the source of direction, for addressing a memory which stores corresponding incremental changes in the magnitude of the deflection signals to be applied to the X and to the Y coordinates of the display. The stored increments are accumulated and converted to analog signals suitable for driving the X and the Y coordinate axes of the display.

## 3,794,994
## FEEDBACK INTEGRATOR WITH PEDESTAL ELIMINATION

Lawrence M. Leibowitz, Fairfax, Va., and Richard K. Baldauf, Greenbelt, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 29, 1972, Ser. No. 267,316
Int. Cl. G01s 9/06
U.S. Cl. 343—5 DP 3 Claims

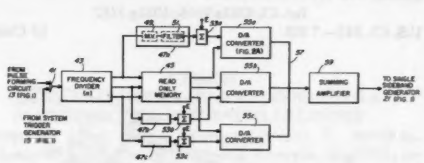


A digital feedback integrator, especially adapted to provide increased target detection ability in radar systems. The feedback integrator is employed in the signal processing circuitry and compensates for arithmetic truncation errors by advantageously avoiding a final truncation pedestal in the integrating output.

## 3,794,995
## MODULATION SIGNAL GENERATOR AND APPARATUS USING SUCH GENERATOR

Bernard J. Thompson, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 2, 1972, Ser. No. 277,187
Int. Cl. G01s 7/28; H03k 13/04
U.S. Cl. 343—5 DP 3 Claims

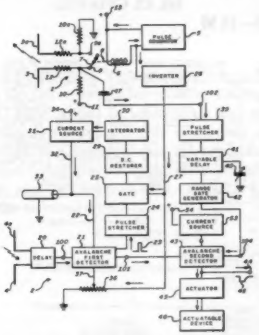


Improved apparatus for generating a time-varying analog signal, as for example, a chirp modulation signal for a pulse compression radar, is shown. The disclosed apparatus incorporates: a memory for storing a set of digital words representative of samples of the time-varying analog signal; at least two digital-to-analog converters having their outputs connected to a common bus; and means for distributing, at a predetermined rate, successively read digital words from the memory to the digital-to-analog converters. Each one of the latter elements is actuated also by a time-varying weighting signal so the frequency spectrum of the desired time-varying analog signal is within predetermined limits.

## 3,794,996
## STABLE BASE-BAND SUPERREGENERATIVE SELECTIVE RECEIVER

Kenneth W. Robbins, Wilmington, and Gerald F. Robbins, Lexington, both of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed July 12, 1972, Ser. No. 271,084
Int. Cl. G01s 9/06
U.S. Cl. 343—7 A 11 Claims



An energy-amplifying signal-selecting circuit for sampling base-band signals, such as directionally transmitted subnanosecond signals reflected from objects, is arranged to provide a substantial output signal for the operation of apparatus, for example, such as passenger protective or restraining apparatus in the event of a vehicular collision. The system includes a broad band transmission line antenna cooperating with biased semiconductor first and second detector elements, the first detector being located within the transmission line for detecting substantially the total energy of a received base-band echo signal. The second detector provides time selected or gated outputs indicating the presence of the gated echo pulse.

3,794,997

## VEHICLE WITH APPARATUS FOR DETECTING POTENTIAL COLLISIONS

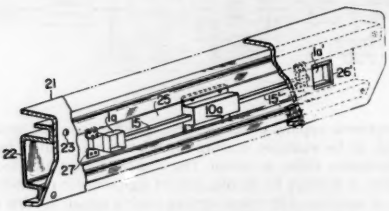
Kazuhito Iwatsuki; Masami Nishibu, and Tohru Toshioka, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 23, 1972, Ser. No. 237,362

Claims priority, application Japan, Sept. 30, 1971, 46-88658; Oct. 7, 1971, 46-91640

Int. Cl. G01s 9/46; H01g 1/32

U.S. Cl. 343—7 ED 15 Claims



In a vehicle having an apparatus for detecting potential collisions, a chamber is defined by a horizontal C-shaped reinforcing plate inside the vehicle's bumper. A horn-shaped antenna for transmitting and receiving microwaves and forming part of the detecting apparatus is mounted within the chamber, integrally with a lighting fixture. A waveguide connects the antenna to a cabinet incorporating a microwave circuit and mounted in the chamber.

3,794,998

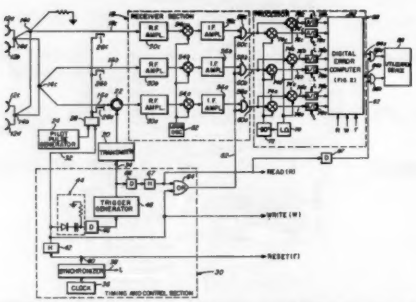
## MONOPULSE RADAR RECEIVER WITH ERROR CORRECTION

Earl C. Pearson, Jr., Watertown; Gerrit B. Postema, Wayland; Willard W. McLeod, Jr., Lexington, and Frederick A. Fenzel, Natick, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 26, 1972, Ser. No. 247,674

Int. Cl. G01s 9/22

U.S. Cl. 343—16 M 3 Claims



A monopulse radar receiver is disclosed wherein angle error digital computation apparatus is used for correcting received target return signals in accordance with digital correction signals which are derived within such receiver in response to pilot pulses. Such digital computation apparatus includes means for generating, from pilot pulses, digital signals representative of the pair of quadrature components of video signals developed in the sum channel and each one of the difference channels. The quadrature components associated with the target return signals are then corrected in accordance with the quadrature components associated with the digital correction signals.

3,794,999

## NOISE-FIGURE MEASURING CIRCUIT

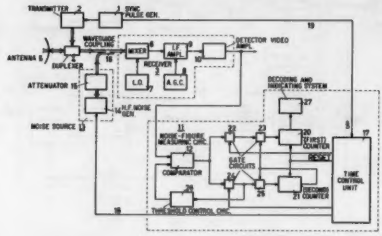
Bernard Gellekink, Hengelo, Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Apr. 19, 1972, Ser. No. 245,560

Claims priority, application Netherlands, Apr. 20, 1971, 7105272

Int. Cl. G01s 7/40; H04b 15/00

U.S. Cl. 343—17.7 5 Claims



The invention relates to a noise-figure measuring circuit for the determination of the receiver noise in an operational radar receiver. A comparator is alternatively supplied with the receiver noise and the sum of the receiver noise and the noise signals, which are obtained from a noise source connected to the input of the radar receiver, each pulse repetition period. This comparator converts the noise signals exceeding a certain threshold into standardised noise pulses. The noise-figure measuring circuit comprises two counters which are supplied with the noise pulses derived from the receiver noise and also with the noise pulses derived from the sum of the receiver noise and the noise signals from the noise source. One of the two counters functions as reference counter. If this counter has reached a certain count position, the counters are both blocked, and the ratio of the count positions determines the ratio between the power of the receiver noise and the power of the noise signals from the noise source.

3,795,000

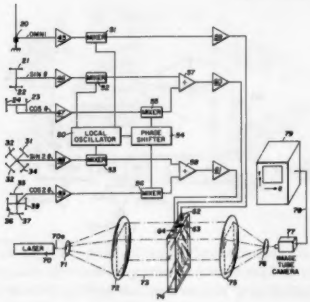
## OPTICAL INTERFERENCE DIRECTIONAL SENSING

De Lamar T. Bell, Jr., and Robert E. Lee, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 23, 1966, Ser. No. 605,530

Int. Cl. G01s 3/46

U.S. Cl. 343—113 13 Claims



Disclosed herein is a method and apparatus for determining the frequencies and angles $\phi$ between a reference direction and radial lines directed from a monitoring station toward radiating field sources of unknown locations by generating an

omni signal, a sin $\phi$ and cos $\phi$ signal, and a sin $2\phi$ and cos $2\phi$ signal to produce three parallel sound waves traveling through a body whose index of refraction is varied in dependence upon the signal from said sources so as to produce an interference pattern in light issuing from said body. The interference pattern is displayed on a two-dimensional basis in which one dimension represents the frequency of a given source and the other dimension represents the angle $\phi$ between a reference direction and a line extending from the monitoring station to the source.

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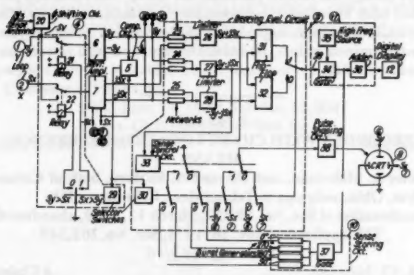
**3,795,001**

## DIRECTION FINDER WITH BEARING SENSE DETERMINATION

**Dag Poppe, Gjettum, and Gunnar Viggo Odegaar, Simensbraten, both of Norway, assignors to International Standard Electric Corporation, New York, N.Y.**

**Filed May 8, 1972, Ser. No. 251,282**
**Claims priority, application Norway, May 7, 1971, 1733/71**
**Int. Cl. G01s 3/12**
**U.S. Cl. 343—119** **8 Claims**



A dual orthogonal loop antenna direction finding system having corresponding dual receiver channels and a reference (sense) antenna. The equipment is programmed through at least "Updating," "Bearing," "Sense" and "Display" modes in which receiver channels are phase and gain equalized, bearing readings are taken without regard to ambiguities, and corrected readings are displayed respectively. Bearing readings are stored before display until corrected by a process including relative bearing angle calculation against more than one reference vector.

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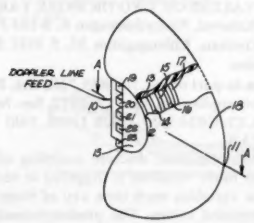
**3,795,002**

## WIDE-ANGLE PLANAR-BEAM ANTENNA ADAPTED FOR CONVENTIONAL OR DOPPLER SCAN USING DIELECTRIC LENS

**Jeffrey T. Nemit, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.**

**Filed Dec. 18, 1972, Ser. No. 316,240**
**Int. Cl. H01q 19/06, 3/26**
**U.S. Cl. 343—754** **6 Claims**




An antenna involving a plurality of vertical-array-excited parallel-plate coordinate converters feeding a dielectric lens in the shape of a partial toroid. Each corresponding element of the array feeding each parallel-plate coordinate converter is fed in parallel through a wave guide feed arrangement from a Doppler line feed or phased array feed. The radiated beam shape tends to hold its focus and, therefore, has uniform width in elevation over the full azimuth beam width at all useful elevation beam positions.

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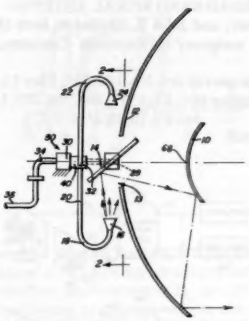
**3,795,003**

## SCHWARZSCHILD RADAR ANTENNA WITH A UNIDIRECTIONAL TURNSTILE SCANNER

**James M. Meek, Silver Spring; Clarence F. Ravilious, Rockville, and Whilden G. Heinard, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Feb. 26, 1973, Ser. No. 335,875**
**Int. Cl. H01q 19/14**
**U.S. Cl. 343—754** **13 Claims**



A Schwarzschild Antenna includes feed horns respectively mounted on a turnstile waveguide switch. During transmission, as each horn passes a particular arc of rotation, microwave energy is emitted from the horn onto an adjacent mirror that reflects the energy to the antenna reflectors. The result is a unidirectional scan in the far field. A tracking mode of operation is also provided. Either of the two modes of operation may be selected by the operator.

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**3,795,004**

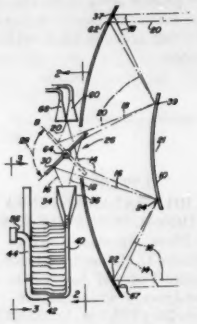
## CASSEGRAIN RADAR ANTENNA WITH SELECTABLE ACQUISITION AND TRACK MODES

**James M. Meek, Silver Spring; Clarence F. Ravilious, Rockville, and Whilden G. Heinard, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Feb. 26, 1973, Ser. No. 335,877**
**Int. Cl. H01q 3/18, 3/20, 3/26**
**U.S. Cl. 343—761** **10 Claims**

A Schwarzschild Antenna cooperates with an organ pipe scanner to achieve wide angle sectoral scanning of a high gain pencil beam. A rotatable mirror switches the antenna to conical scanning whereby microwave energy communicates

between a nutating horn and reflectors of the Schwarzschild Antenna. During conical scanning, the organ pipe scanner



remains unenergized. The mode of operation is selectable by the operator and the system is designed for rapid switching.

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**3,795,005**

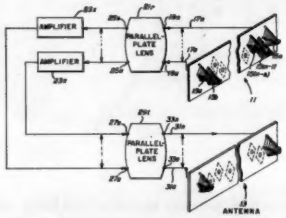
**BROAD BAND SPIRAL ANTENNA**

**George J. Monser, and John R. Ehrhardt, both of Santa Barbara, Calif., assignors to Raytheon Company, Lexington, Mass.**

**Continuation-in-part of Ser. No. 142,223, May 11, 1971. This application Oct. 12, 1972, Ser. No. 297,112**

**Int. Cl. H01q** *1/36*

**U.S. Cl. 343—895** **5 Claims**




Antenna elements for substantially circularly-polarized electromagnetic energy are shown. The disclosed elements, formed on a tapered form having an elliptical cross section, are particularly well suited for use as elements in an antenna array because such a cross-sectional shape permits individual elements to be more closely positioned with respect to each other, thereby raising the frequency of the electromagnetic energy at which grating lobes occur.

In a second embodiment the eccentricity of the tapered form is relatively large, so the greater part of each antenna turn lies in a plane. Such a configuration radiates substantially linearly polarized radio frequency energy.

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**3,795,006**

**SEISMIC SHOCK RECORDER AND ANNUNCIATOR SYSTEM**

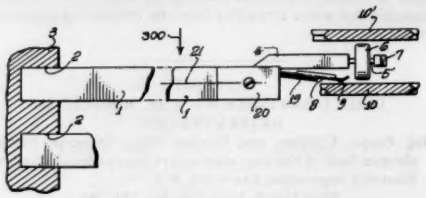
**Paul D. Engdahl, 2850 Monterey Ave., Costa Mesa, Calif. 92626, and A. Wallace Russell, Altadena, Calif., assignors to said Engdahl, by said Russell**

**Filed May 17, 1973, Ser. No. 361,240**

**Int. Cl. G01d** *15/02, 7/00*

**U.S. Cl. 346—7** **11 Claims**

A seismic shock recorder and annuciator system for installation in locations where effects of earthquake or other shocks may be of critical importance, e.g., at nuclear power plants. The recorder is a sealed, passive instrument employing a set of resonant cantilever reeds provided with styli which emboss linear records on stationary record plates. The plates, as in my prior U. S. Pat. No. 3,683,397, may have special surface coatings which make detectible the individual excursion peaks



of the motion of the styli, permitting the computation of the acceleration vs. time curve, as well as the response spectrum, even though the record plates do not move. The reeds are provided with novel improved damping and support means. The annunciator system signals the deflections of reeds beyond predetermined points, by means of contacts and novel electronic circuitry.

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**3,795,007**

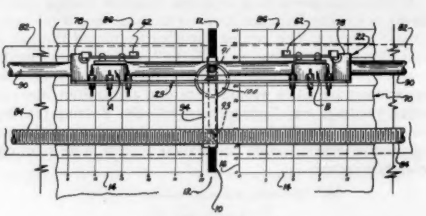
**RECORDER WITH CHART LOCATION REFERENCE MEANS**

**James A. Mohrman, and Howard A. Sanford, both of Columbus, Ohio, assignors to Telmar, Inc., Columbus, Ohio**

**Continuation of Ser. No. 19,029, March 12, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,549**

**Int. Cl. G01d** *9/40*

**U.S. Cl. 346—32** **4 Claims**



A recorder characterized by a chart, a chart location reference means, and associated marking means for marking values on said chart. The marking means is enabled to record a variable on the chart in response to the sensing of the chart location reference means by a light sensitive sensor means.

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**3,795,008**

**METHOD FOR THE DISCRETE SAMPLING OF CO-RELATED VALUES OF TWO OR MORE VARIABLES**

**Bjorn Henrik Kolsrud, Nasbydalsvagen 6, S-183 31 Taby, and Claes Olof Ostman, Lillangsgatan 35, S 0161 52 Bromma, both of Sweden**

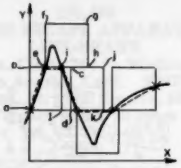
**Continuation-in-part of Ser. No. 869,768, Oct. 27, 1969, abandoned. This application Apr. 12, 1972, Ser. No. 243,131**

**Int. Cl. G01d** *9/00*; **H03k** *17/00, 5/00*

**U.S. Cl. 346—33 R** **10 Claims**

Automatically controlled, discrete sampling of co-related values of two or more variables is triggered in response to at least two of the variables each time any of them reaches or passes predetermined values. The predetermined values are preferably equidistant and may be defined by one or more preceding samples. At the time of each sampling, the particular variable which has triggered the sampling is determined.

An apparatus used to practice the method comprises means for triggering sampling of the variables when any of two or more of them is subjected to a predetermined variation in its



magnitude, and the apparatus further includes means for supplying the sampled values to indicating, recording, or appropriate controlling means.

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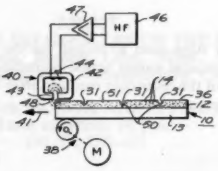
3,795,009

## INFORMATION RECORDING METHODS, APPARATUS AND MEDIA USING DEFORMABLE MAGNETIZED MATERIALS

**Joseph Gaynor, Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.**

**Filed June 17, 1970, Ser. No. 47,064**
**Int. Cl. G11b** *7/00;* **H04n** *5/82*
**U.S. Cl. 346—74 M** **40 Claims**



A method of recording information provides, in a deformable magnetic recording medium, deformed portions representative of the information, and magnetizes these deformed portions differently from other portions of the magnetic recording medium so as to establish a magnetic record of the information. Apparatus and media for practicing this method are also disclosed.

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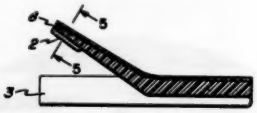
3,795,010

## WRITING APPARATUS AND METHOD OF MANUFACTURE

**Howard D. Ring, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.**

**Division of Ser. No. 14,138, Feb. 25, 1970, abandoned. This application Dec. 29, 1971, Ser. No. 213,761**
**Int. Cl. G01d** *15/24*
**U.S. Cl. 346—74 ES** **6 Claims**



A stylus and its method of manufacture for forming an image on the recording medium of a printing apparatus having the structure of a substrate upon which a plurality of conductors are etched or printed. The writing edge of the stylus containing the pin electrodes formed by the conductors has a chip of wear resistant or hard material laminated to the substrate to prevent excessive wear of the pin electrodes. Alternately, the substrate itself is made of a wear resistant or hard material to prevent wear of the pin electrodes.

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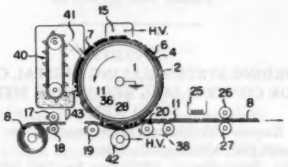
3,795,011

## ELECTROSTATIC PRINTING DEVICE

**Wasaburo Ohta, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan**

**Division of Ser. No. 814,547, April 9, 1969, Pat. No. 3,697,268. This application Feb. 7, 1972, Ser. No. 224,363**
**Claims priority, application Japan, Apr. 10, 1968, 43/23888**
**Int. Cl. G06k** *15/14;* **G03g** *13/14*
**U.S. Cl. 346—74 P** **3 Claims**



An electrostatic printing method and device therefor comprising the steps of (1) forming an electrostatic latent image upon a conductive photoreceptor by an electronic photography, (2) developing said image with an electrically insulating and water repellent developing agent and fixing the developed image if necessary, (3) rendering non-image portions (that is the portions having no developing agent attached thereto) hydrophilic with a hydrophilic agent after said fixing, (4) rendering said hydrophilic portions electrically conductive with a conducting agent, (5) electrically charging the electrostatic printing plate, thus obtained thereby binding the charge upon the electrically chargeable or charge retainable and water repellent image portion, (6) transferring said charge upon an electrically insulating body, thereby forming an electrostatic latent image, and (7) developing said electrostatic latent image and if necessary fixing said image thus developed.

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3,795,012

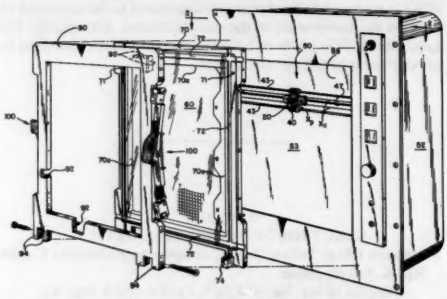
## FAR SIDE PLOTTER

**Frank A. Ramrath, Needham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.**

**Filed May 31, 1972, Ser. No. 258,154**
**Int. Cl. G01d** *9/40, 15/10*
**U.S. Cl. 346—76 R** **7 Claims**

Data plotting and display apparatus incorporating a light-passing thermally sensitive recording sheet diaphragmatically supported in the recording field of a positionally controlled thermal stylus. The stylus is provided with means for directing a beam of light on the sheet for visibility on the non-contacted

side of the sheet to indicate stylus position in the recording field. The light beam preferably originates from a light bulb



that also provides the source of heat for thermal plotting on the recording sheet.

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**ERRATUM**

For Class 360—109 see:
Patent No. 3,794,769

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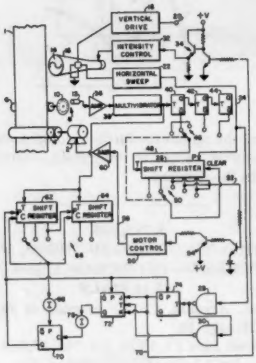
**3,795,013**

## RECORDING SYSTEM HAVING DIGITAL CONTROL FOR CONTROLLING RECORDING MEDIUM MOVEMENT

**Richard Eugene McKinley, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.**

**Filed Oct. 13, 1972, Ser. No. 297,261**
**Int. Cl. G01d** *15/24*
**U.S. Cl. 346—136** **10 Claims**

A digital control for a recording system to provide incremental lengths of a recording medium between recordings of an input signal using digital counters to count signals representative of the passage of incremental lengths of the recording medium to either control the blanking and unblanking of a




cathode ray tube used to record on the recording medium along a horizontal sweep action recording line or to control the motion of the recording medium after the termination of a recording operation.

# DESIGNS

## FEBRUARY 26, 1974

**230,436**
**COMBINED ESCAPE APPARATUS AND LINE-BRAKE**
Charles A. Clark, 764 N. Madison Ave., Los Angeles, Calif. 90029
Filed Aug. 21, 1972, Ser. No. 282,572
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27

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**230,437**
**LENS FOR SKI GOGGLES OR THE LIKE**
George R. Rabuse, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 12, 1973, Ser. No. 331,537
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234

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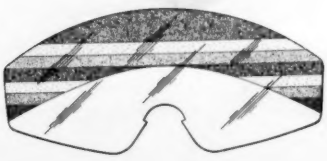
**230,438**
**LENS FOR SKI GOGGLES OR THE LIKE**
George R. Rabuse, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 12, 1973, Ser. No. 331,518
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



**230,439**
**LENS FOR SKI GOGGLES OR THE LIKE**
George R. Rabuse, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 12, 1973, Ser. No. 331,773
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234

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**230,440**
**SPORT SHOE**
William J. Cohen, 44 Farnsworth St., Boston, Mass. 02210
Original design application Aug. 21, 1972, Ser. No. 282,052. Divided and this application Mar. 5, 1973, Ser. No. 338,097
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—279

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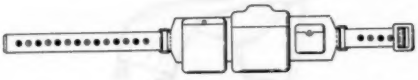
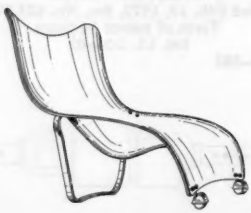
**230,441**
**HUNTER'S BELT**
Russell G. Moyer, 402 Deland Drive, Utica, N.Y. 13502
Filed Feb. 10, 1972, Ser. No. 225,375
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—381



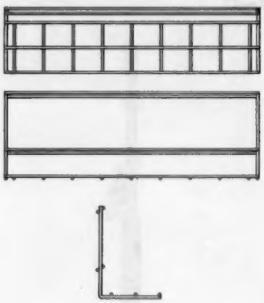
230,442
**FRINGE FOR A MUSICAL INSTRUMENT**
Rudolph Dopera, 18906 Normandie Ave., Gardena, Calif. 90247
Filed Dec. 15, 1971, Ser. No. 208,538
Term of patent 14 years
Int. Cl. D5—*08*
U.S. Cl. D3—32 E

230,443
**CHAIR OR SIMILAR ARTICLE**
Odo Klose, Wuppertal-Elberfeld, Germany, assignor to Giroflex-Entwicklungs AG, Koblenz, Switzerland
Filed Feb. 4, 1972, Ser. No. 223,800
Claims priority, application Switzerland Aug. 13, 1971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

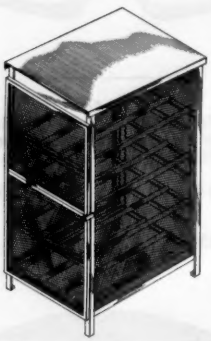
230,444
**EASY-CHAIR**
Oskar Kogoj, Miren pri Novi Gorici, and Boris Ferlat, Kromberg pri Novi Gorici, Yugoslavia, assignors to Institut pohistvene industrije "Meblo," Nova Gorica, Yugoslavia
Filed Oct. 4, 1971, Ser. No. 186,584
Claims priority, application Yugoslavia Apr. 21, 1971
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—37



230,445
**DISPLAY CASE DIVIDER**
Tanner S. Chrisler, 5044 Westminster, St. Louis, Mo. 63108
Filed Oct. 12, 1971, Ser. No. 188,646
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



230,446
**STORAGE CABINET FOR GAS CYLINDERS**
Melvin E. Price, Warsaw, Ind., assignor to Price's Gas Equipment, Inc., Columbia City, Ind.
Filed Apr. 27, 1972, Ser. No. 248,346
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



230,447
**END SUPPORT FOR A GARMENT DISPLAY RACK**
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Aug. 7, 1972, Ser. No. 278,592
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—193

230,448
**ARTICLE HOLDER FOR A DISPLAY RACK**
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,279
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—194

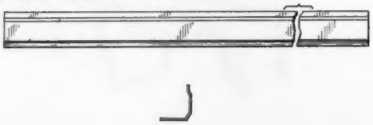
230,449
**ARTICLE HOLDER FOR A DISPLAY RACK**
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,280
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—194

230,450
**ARTICLE HOLDER FOR A DISPLAY RACK**
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,282
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—194

230,451
END POST FOR A GARMENT DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed Aug. 7, 1972, Ser. No. 278,591
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—195

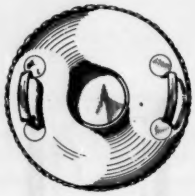
230,452
CHAIR BASE OR SIMILAR ARTICLE
Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.
Filed July 3, 1972, Ser. No. 268,848
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196

230,453
BED RAIL
George M. Harris, Chicago, Ill., assignor to Harris-Hub Company, Inc.
Filed Sept. 25, 1972, Ser. No. 291,784
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D6—198

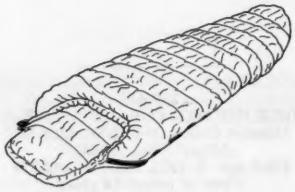




230,454
CUSHION
Ray N. Thompson, 4096 West 5010 South, Kearns, Utah 84118
Filed Aug. 26, 1971, Ser. No. 175,414
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

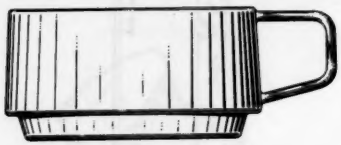


230,455
SLEEPING BAG
Harry E. Hunt, Boulder, Colo., assignor to Alpine Designs, Inc., Boulder, Colo.
Filed Aug. 21, 1972, Ser. No. 282,347
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—201



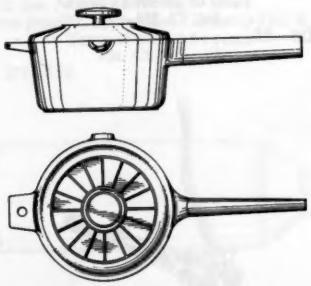
230,456
FLOOR MAT OR THE LIKE
Henry L. White, 24 Livingston St., Lincoln, R.I. 02865
Filed Dec. 29, 1971, Ser. No. 213,800
Term of patent 7 years
Int. Cl. D6—*11*
U.S. Cl. D6—212

230,457
DRINKING CUP
Robert F. Bateman, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.
Filed Aug. 18, 1971, Ser. No. 172,963
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9

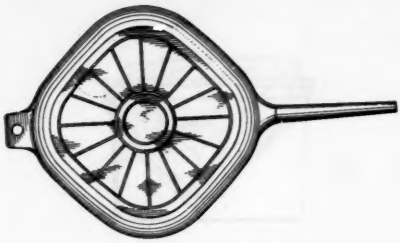


230,458
IRON
Richard B. Hall, Glen Ellyn, and Norman A. Steinkamp, Chicago Heights, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed May 26, 1972, Ser. No. 257,488
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—20

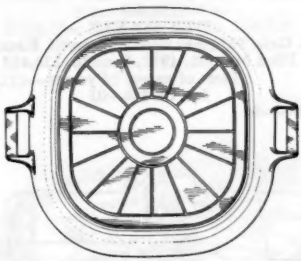
230,459
COVERED SAUCEPAN
Gerald Gulotta, New City, N.Y., assignor to J. C. Penney Company, Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,922
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



230,460
FRY PAN
Gerald Gulotta, New City, N.Y., assignor to J. C. Penney Company, Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,923
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95

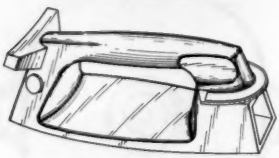


230,461
COVERED PAN
Gerald Gulotta, New City, N.Y., assignor to J. C. Penney Company, Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,921
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—97

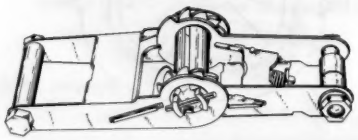


230,462
**BUCKET**
Cecil Renou, Johannesburg, Transvaal, Republic of South Africa, assignor to Renou Plastics (Proprietary) Limited, Isando, Transvaal, Republic of South Africa
Filed Nov. 12, 1971, Ser. No. 198,502
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—187

230,463
**ELECTRIC IRON HANDLE**
Robert O. Ernest, Oak Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 17, 1972, Ser. No. 218,645
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—204

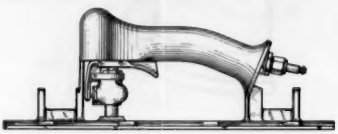


230,464
**WEB BUCKLE**
James G. Gale, 9811 Lee Court, Leawood, Kans. 67855
Filed Mar. 13, 1972, Ser. No. 234,455
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—44



230,465
**HALYARD SHORTENER**
Henry W. Lange, Waretown, N.J. (R.F.D. 1, 115 Bloomfield Road, Barnegat, N.J. 08005)
Filed June 13, 1972, Ser. No. 262,278
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—44

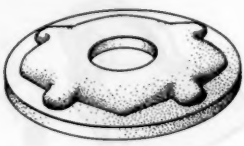
230,466
**WALL WASHING TROWEL**
Maurice H. Miller, Oak Park, Ill., assignor to Hild Floor Machine Co., Inc., Chicago, Ill.
Filed Nov. 18, 1971, Ser. No. 200,278
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—45



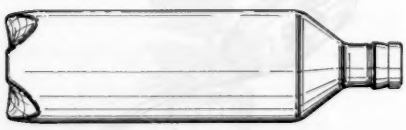
230,467
**MULTIPURPOSE BAND METAL FABRICATING TOOL**
Karl A. Bohn, 109—16 222nd St., Queens Village, N.Y. 11429, and Francis Shaw, East Hampton, N.Y.; said Francis Shaw assignor to Karl A. Bohn
Filed July 3, 1972, Ser. No. 268,652
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—55

230,468
HANDLE FOR A SCRIBING TOOL OR THE LIKE
Geoffrey Fairbairn, 24 Chesterton Towers, Chapel St., Cambridge, England
Filed Nov. 16, 1971, Ser. No. 199,404
Claims priority, application Great Britain May 21, 1971
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—107

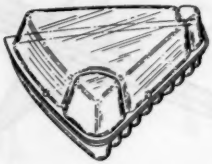
230,469
WASHER DEVICE
Richard L. Reynolds, Carpentersville, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Aug. 5, 1971, Ser. No. 169,580
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—274



230,470
BOTTLE
Walter Frohn, 100 Geiselgasteigstrasse, D8000 Munich 90, Germany
Continuation-in-part of design application Ser. No. 131,585, Apr. 5, 1971. This application June 30, 1972, Ser. No. 267,887
Claims priority, application Germany Oct. 6, 1970
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—158

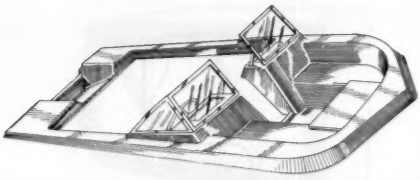


230,471
FOOD CONTAINER
Charles Alfred Bernheiser, Reading, Pa., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Jan. 13, 1972, Ser. No. 217,721
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182

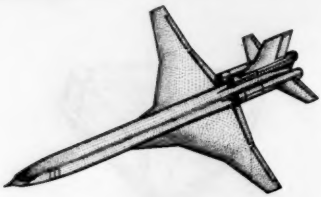


230,472
COMBINED ACTUATOR AND DISPENSING CAP FOR A PRESSURIZED CONTAINER
Thomas H. Hayes, Greenwich, Conn., assignor to VCA Corporation, Greenwich, Conn.
Filed Nov. 20, 1972, Ser. No. 308,175
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—258

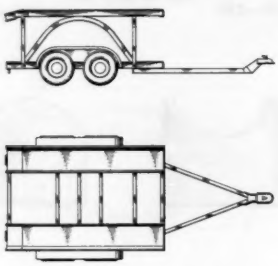
230,473
BOAT UPPER SHELL
Jay A. Potsdam, 3 Bright River Point, N. River Shores, Stuart, Fla. 33494
Filed Dec. 30, 1971, Ser. No. 214,525
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—70



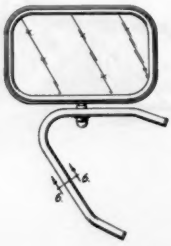
230,474
AIRCRAFT
Lawrence Bernard Rellis, 10460 SW. 163rd St., Miami, Fla. 33157
Filed June 14, 1972, Ser. No. 262,534
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71



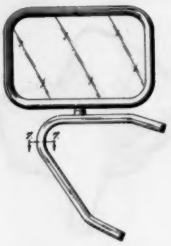
230,475
DOUBLE DECK RACING CAR TRAILER
Marjorie Ann M. Smith, 3825 Valley Blvd., 59, Walnut, Calif. 91789
Filed June 11, 1973, Ser. No. 368,601
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—101



230,476
REAR VIEW MIRROR FOR VEHICLES
James W. Holzman, Haycock Township, Bucks County, Pa., assignor to Delbar Products, Inc., Perkasie, Pa.
Filed June 19, 1972, Ser. No. 264,252
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187

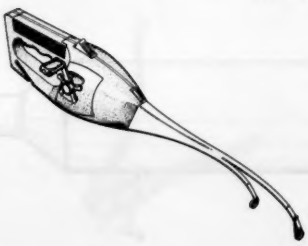


230,477
REAR VIEW MIRROR FOR VEHICLES
James W. Holzman, Haycock Township, Bucks County, Pa., assignor to Delbar Products, Inc., Perkasie, Pa.
Continuation-in-part of design application Ser. No. 264,252, June 19, 1972. This application Aug. 25, 1972, Ser. No. 283,635
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



230,478
DOWNSPOUT SPLASH BLOCK
Bruce A. Littman, Highland Park, Ill., and Robert O. Memmel, Okauchee, and Jack B. Waldheim, Mequon, Wis., assignors to Benson Mfg. Corporation, Menomonee Falls, Wis.
Filed Apr. 24, 1972, Ser. No. 247,260
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 A

230,479
FISHING RIG
Samuel L. Popeil, Chicago, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.
Filed Dec. 4, 1972, Ser. No. 312,222
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—26

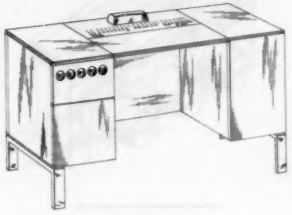


230,480
VALVE MEMBER
Gilbert Schwartzman, 20 Wilmot Circle, Scarsdale, N.Y. 10583
Filed Nov. 11, 1971, Ser. No. 198,064
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

230,481
FAUCET BODY
Martin Omar Rowlands, Epping, England, assignor to IMI Opella Limited, Birmingham, England
Filed Aug. 23, 1971, Ser. No. 174,294
Claims priority, application Great Britain Feb. 25, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

230,482
ROOM DEODORIZER
John S. Levey, Westlake Village, Calif., assignor to Days-Ease Home Products Corp., North Hollywood, Calif.
Filed May 15, 1972, Ser. No. 253,686
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

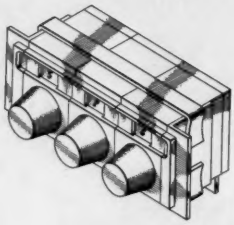
230,483
COMMUNICATION CONTROL DESK OR THE LIKE
Gilbert Pedinielli, Nice, and Daniel Richelet, St. Jeannet, France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 28, 1972, Ser. No. 266,903
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 R



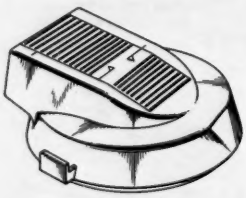
230,484
ELECTRONIC CALCULATING MACHINE
Masafumi Yamagami, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sept. 20, 1972, Ser. No. 290,486
Claims priority, application Japan Apr. 12, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

230,485
FRONT PANEL FOR A COMPUTER CONSOLE
Paul A. Jenkins, Groton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Sept. 29, 1972, Ser. No. 296,631
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

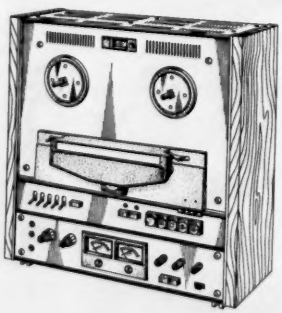
230,486
ELECTRICAL SWITCH ASSEMBLY
Dwayne A. MacDonald, Santa Ana, Calif. (1921 Maryglade Drive, Grafton, Wis. 53024)
Filed May 5, 1972, Ser. No. 250,856
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



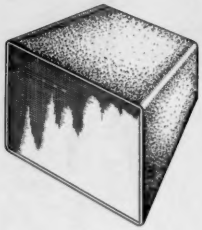
230,487
ACOUSTIC COUPLER
Clifford I. Dawson, Morgan Hill, and Royal G. Hazlitt, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,464
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



230,488
TAPE RECORDER
Haruo Shimizu, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Dec. 15, 1972, Ser. No. 315,558
Claims priority, application Japan June 17, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B

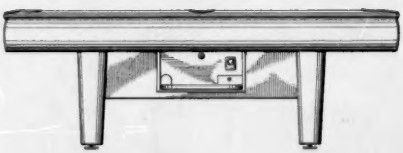


230,489
LOUDSPEAKER ENCLOSURE
Scott F. Everitt, Indianapolis, Ind., assignor to Acoustic Fiber Sound Systems, Inc., Indianapolis, Ind.
Filed Mar. 28, 1973, Ser. No. 345,714
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G

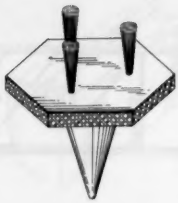


230,490
CONSTRUCTION TOY FIGURE
Sidney Bass, Los Angeles, and Alexandra B. Laird, Venice, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 26, 1972, Ser. No. 247,917
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

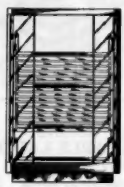
230,491
COIN ACTIVATED POOL TABLE
Harvey Heiss, North Miami, Fla., assignor to A.T.I. Recreation Inc., Miami Lakes, Fla.
Filed Jan. 13, 1972, Ser. No. 217,715
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—3



230,492
GOLF TEE
Carleton James Romer, Jr., and Nicholas M. Romer, Minnetonka, Minn., assignors to Romer Plastics, Inc., Minnetonka, Minn.
Filed May 11, 1973, Ser. No. 359,427
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT

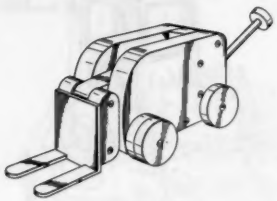


230,493
PLANT GROWTH APPARATUS
R. Louis Ware, 2108 Middle Fork Road, Northfield, Ill. 60093
Original design application Sept. 21, 1970, Ser. No. 25,087, now Patent No. 225,252, dated Nov. 28, 1972. Divided and this application Nov. 15, 1972, Ser. No. 306,684
Term of patent 14 years
Int. Cl. D6—*05;* D11—*02*
U.S. Cl. D35—3 A

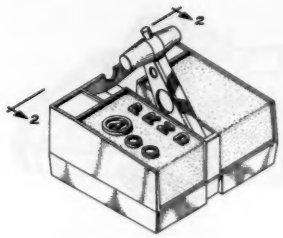


230,494
SET OF CHESS PIECES
Elbert F. Elam, 17620 Talford Ave., Cleveland, Ohio 44128
Filed July 28, 1971, Ser. No. 167,087
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH

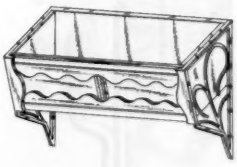
230,495
TOY FORK LIFT
Ernest Casper Wolf, 919 Washington SE., Albuquerque, N. Mex. 87108
Filed Mar. 17, 1972, Ser. No. 235,886
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 T



230,496
CONTROL FOR ELECTRICAL VEHICLE
Edwin O. Stastny, Pasadena, Calif. (2122 N. Pasadena Ave., Santa Ana, Calif. 92701)
Filed Jan. 15, 1973, Ser. No. 323,905
Term of patent 7 years
Int. Cl. D21—*01;* D13—*03*
U.S. Cl. D34—15 A




230,497
FLOWER BOX
Eugene T. Kleine, 87 Ocean Ave., Massapequa, N.Y. 11758
Filed Mar. 7, 1972, Ser. No. 232,649
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 R

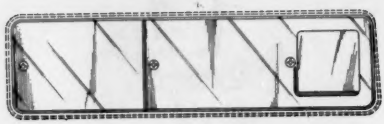


230,498
TRACTOR CAB
Oscar Stanley Williams, Arlington, Ind. 46104
Filed Jan. 5, 1972, Ser. No. 215,699
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5

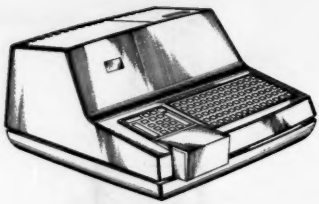
230,499
PENDANT
Ade Bethune, Newport, R.I., assignor to Terra-Sancta Creations, Inc., Philadelphia, Pa.
Original design application Nov. 18, 1970, Ser. No. 26,064, now Patent No. 225,560, dated Dec. 19, 1972. Divided and this application July 31, 1972, Ser. No. 276,388
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 A

230,500
HAND-HELD CANDELABRUM
William Matichak, 424 Delaware St., Peckville, Pa. 18452, and John Zeleniak, 327 Oak St., Taylor, Pa. 18517
Filed Apr. 16, 1973, Ser. No. 351,302
Term of patent 14 years
Int. Cl. D26—*01;* D12—*16*
U.S. Cl. D48—2

230,501
LENS FOR TAILLIGHT ASSEMBLY
Gianpaolo Boano, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Aug. 9, 1971, Ser. No. 170,422
Claims priority, application Italy Feb. 19, 1971
Term of patent 7 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 A

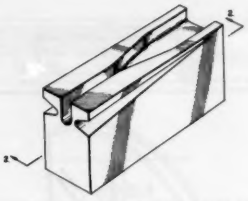


230,502
ELECTRONIC CASH REGISTER
Lynton Randolph Knapp, Orange, and Ralph Waldo Province, Westminster, Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.
Filed Feb. 10, 1972, Ser. No. 225,363
Term of patent 14 years
Int. Cl. D18—*01;* D14—*02*
U.S. Cl. D52—4 A

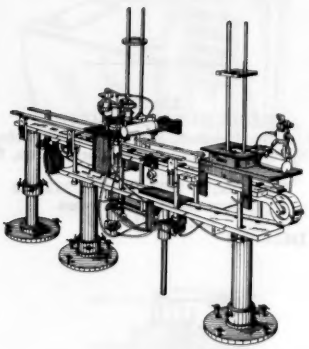


230,503
FOLDABLE LADDER
George Harvey Emmons, 11 S. 12th St., Marshalltown, Iowa 50158
Filed Dec. 29, 1971, Ser. No. 213,778
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D54—1 A

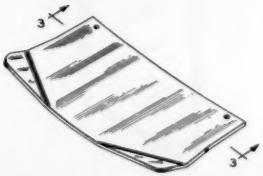
230,504
TAPE FOLDER
Bobby C. Gentry, P.O. Box 152, Temple, Ga. 30179, and J. Orbie Lowery, Rte. 1, Ranburne, Ala. 36273
Filed July 6, 1972, Ser. No. 269,299
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—4



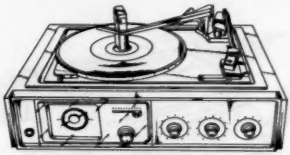
230,505
FILLING AND CAPPING MACHINE
Russell G. Rutherford, 8045 Beach Drive, Rockford, Ill. 61103
Filed Mar. 31, 1972, Ser. No. 240,342
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 C



230,506
SHAKER BOARD FOR AUTOMATIC PIN SETTING MACHINES
George E. Tschann, 3316 Navarre Ave., Oregon, Ohio 43616
Filed May 18, 1972, Ser. No. 254,826
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 H

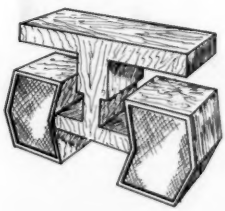


230,507
COMBINED RADIO AND PHONOGRAPH OR SIMILAR ARTICLE
Ken Okabe, Nara, and Hiroaki Yazawa, Yamatokoriyama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza-Kadoma, Kadoma-shi, Osaka, Japan
Filed Apr. 14, 1972, Ser. No. 244,324
Claims priority, application Japan Oct. 15, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

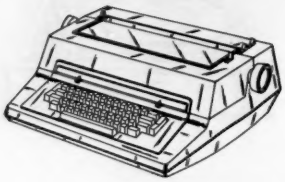


230,508
COMBINED AMPLIFIER AND RECORD PLAYER
Yoshiaki Iida, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 26, 1972, Ser. No. 247,940
Claims priority, application Japan Nov. 27, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R

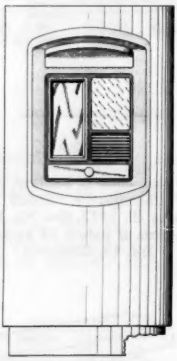
230,509
CABINET
Lorell White, 5041 S. Federal, Apt. 310, Chicago, Ill. 60609
Filed June 19, 1972, Ser. No. 264,273
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 R



230,510
TYPEWRITER
Toshihiko Sakow, Teaneck, N.J., assignor to Triumph Werke Nuremberg A.G., Nuremberg, Germany
Filed Sept. 25, 1972, Ser. No. 291,721
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A

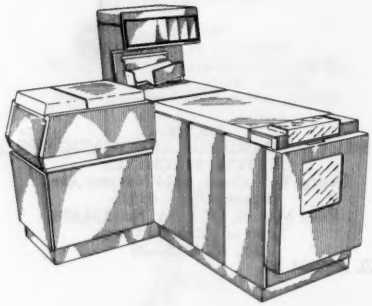


230,511
REMOTE CUSTOMER BANKING TERMINAL
Wolfgang R. Stieber, River Vale, N.J., assignor to The Mosler Safe Company, Hamilton, Ohio
Filed Nov. 24, 1971, Ser. No. 202,073
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D69—1

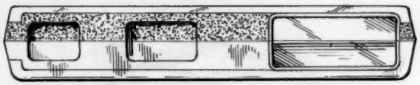


230,512
FILM REEL
Kazuki Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Oct. 27, 1972, Ser. No. 301,314
Claims priority, application Japan June 9, 1972
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T

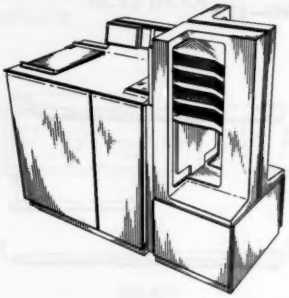
230,513
REPRODUCTION MACHINE
Jacob W. Patla, Fairport, and Leonard Schachner, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 5, 1972, Ser. No. 312,402
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



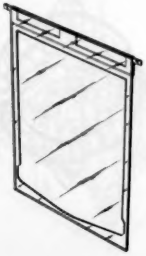
230,514
CAMERA HOUSING
Ronald Emmerling, New City, N.Y., assignor to Berkey Photo, Inc., Paramus, N.J.
Filed Dec. 15, 1972, Ser. No. 315,352
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



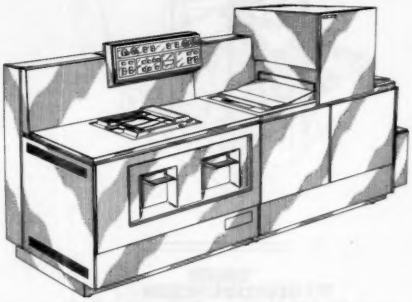
230,515
DOCUMENT REPRODUCING AND SORTING MACHINE
Claude H. Hutcheson, Fairport, N.Y., and John F. Zinni, London, England, assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 5, 1973, Ser. No. 321,491
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



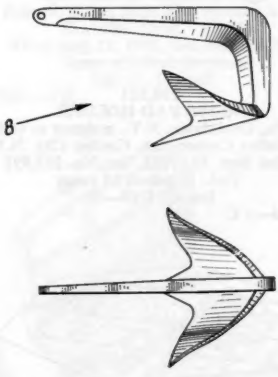
230,516
FILM HOLDER
Nobuyuki Yanagawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed June 1, 1973, Ser. No. 366,203
Claims priority, application Japan Dec. 4, 1972
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 Q



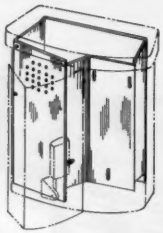
230,517
COMPUTER OUTPUT PRINTER OR SIMILAR ARTICLE
Robert E. Kalvitis, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 24, 1972, Ser. No. 309,541
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



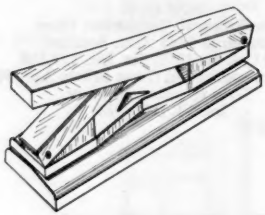
230,518
ANCHOR
Peter Bruce, 10 Torphichen Place, Edinburgh EH3 8Du, Scotland
Filed Oct. 28, 1971, Ser. No. 193,618
Claims priority, application Great Britain Apr. 30, 1971
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D71—1 P



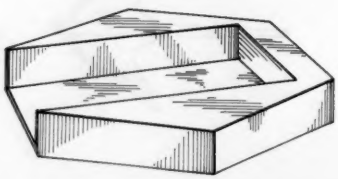
230,519
HOUSING FOR EMERGENCY REPORTING CALL BOX
Willis C. Reddick, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 8, 1971, Ser. No. 206,237
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 A



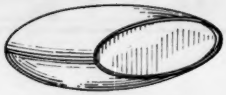
230,520
HAND-PUNCHER
Gerald Dahle, 19 Marienberg, D–863 Coburg, Germany
Filed Apr. 4, 1972, Ser. No. 241,096
Claims priority, application Germany Oct. 14, 1971
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 A



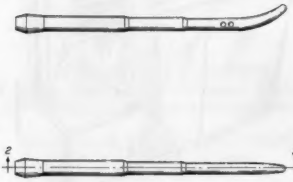
230,521
MEMO PAD HOLDER
Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 28, 1972, Ser. No. 295,991
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C



230,522
HOUSING FOR AN ELECTRONIC EXERCISE APPARATUS
Norman Rothman, Chicago, Ill., assignor to Rothman Industries, Inc., Chicago, Ill.
Filed Mar. 17, 1972, Ser. No. 235,869
Term of patent 14 years
Int. Cl. D13—*03*; D21—*02*; D24—*01*
U.S. Cl. D83—1 S

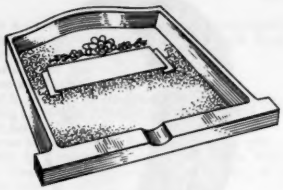


230,523
URETHRAL DILATOR-CATHETER OR SIMILAR ARTICLE
John Francis Carney, Joliet, Ill., assignor to Morton-Norwich Products, Inc.
Filed June 30, 1971, Ser. No. 158,664
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 A

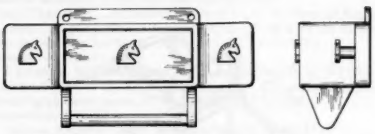


230,524
ASH TRAY OR THE LIKE
Hugh N. Pace, 3516 Poole Road, Raleigh, N.C. 27610
Filed Jan. 11, 1971, Ser. No. 105,765
Term of patent 14 years
Int. Cl. D29—*03*
U.S. Cl. D85—2 H

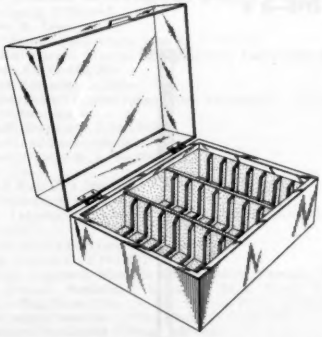
230,525
ASH TRAY
Helen A. Peterson, 5855 N. Sheridan Road, Apt. 5D, Chicago, Ill. 60626
Filed July 21, 1971, Ser. No. 164,986
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2 H



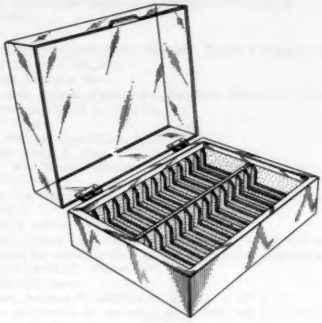
230,526
COMBINED JEWELRY BOX AND TIE RACK
Jeffrey S. Snyder, 535 E. 86th St., New York, N.Y. 10021
Filed Jan. 17, 1972, Ser. No. 218,641
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 B



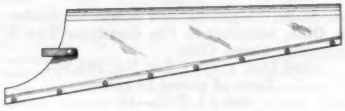
230,527
TAPE CASSETTE CABINET
Joseph L. Berkman, 17 Brewster Terrace, New Rochelle, N.Y. 10804
Filed Feb. 7, 1972, Ser. No. 224,400
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



230,528
TAPE CARTRIDGE CABINET
Joseph L. Berkman, 17 Brewster Terrace, New Rochelle, N.Y. 10804
Filed Feb. 7, 1972, Ser. No. 224,401
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



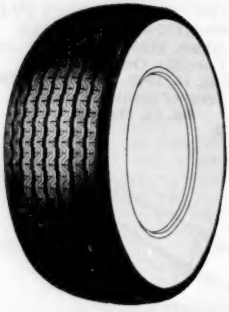
230,529
CASE FOR A HAND SAW
Robert A. Bailey, 2339 E. 12th St., Des Moines, Iowa 50316
Filed June 19, 1972, Ser. No. 264,393
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



230,530
COMBINED CARRYING AND DISPLAY CASE FOR COSMETICS OR THE LIKE
John V. Shinn, 2925 NW. Mulkey Ave., Corvallis, Oreg. 97330
Filed Aug. 10, 1972, Ser. No. 279,706
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R

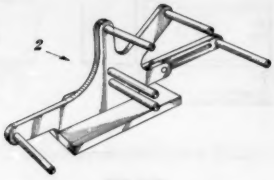
230,531
CANE
Morton I. Thomas, Monroe, N.Y.
(125 South St., Passaic, N.J. 07050)
Filed Dec. 15, 1971, Ser. No. 208,535
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D88—4

230,532
TIRE
Robert A. Stella, Mogadore, and James W. Stiffler, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 1, 1971, Ser. No. 203,944
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



230,533
TIRE
William W. Wolford, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 3, 1972, Ser. No. 215,259
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R

230,534
INKLE LOOM
Secondo B. Strona, 2525 Mountain Drive, Upland, Calif. 91786
Filed Dec. 2, 1971, Ser. No. 204,391
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15




230,535
RAZOR HANDLE
Martin Glaberson, 200 Huntington Road, Stratford, Conn. 06497, and George L. Schick, 20 Gwendolyn Drive, Trumbull, Conn. 06611
Filed Feb. 15, 1973, Ser. No. 332,959
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

# LIST OF PATENTEES

## TO WHOM

## PATENTS WERE ISSUED ON THE 26TH DAY OF FEBRUARY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott, Eugene A.; and Isquith, Alan J., to Dow Corning Corporation. Method of inhibiting the growth of bacteria and fungi using organosilicon amines. 3,794,736, Cl. 424-78.000.

Abbott Machine Co., Inc.: *See—*
Abbott, Samuel L., 3,794,252.

Abbott, Samuel L., to Abbott Machine Co., Inc. Detecting means for yarn processing apparatus. 3,794,252, Cl. 242-38.000.

Abolins, Eizens: *See—*
Round, Byron Joseph; and Abolins, Eizens, 3,793,991.

Aboutboul, Henri A.; Krekeler, Jerome H.; and Kirch, William, to National Petro Chemicals Corporation. Preparation of silica gels. 3,794,712, Cl. 423-338.000.

Aboutboul, Henri A.; Krekeler, Jerome H.; and Kirch, William, to National Petro Chemicals Corporation. Preparation of silica gels. 3,794,713, Cl. 423-338.000.

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Ace Controls, Inc.: *See—*
Chrokey, William J.; Ellis, Larry C.; and Heideman, Robert J., 3,794,309.

Achorn, Frank P.; and Anderson, J. Frank, Jr., to Tennessee Valley Authority. Ruminant direct feeding suspension supplement. 3,794,740, Cl. 426-69.000.

Ackermann, Paul, to Polycarbon Chemie GmbH. Process for the purification of gases. 3,793,808, Cl. 55-89.000.

Adachi, Eiichi; and Saito, Kazutoshi, to Hitachi, Ltd. Method for diffusing Zn into a III-V compound semiconductor crystal through alumina masking. 3,794,533, Cl. 148-175.000.

Adams, Kenneth D., to Singer Company, The. Presser bar pressure control modules. 3,793,969, Cl. 112-235.000.

Adams, Thomas H.; and Miller, Warren K., to Du Pont de Nemours, E. I., and Company. Removing substances from a liquid by precipitation in porous glass beads. 3,794,467, Cl. 23-230.00r.

Adamson, Arthur P.: *See—*
Campbell, William B.; and Adamson, Arthur P., 3,794,444.

Adamson, Fletcher D., to Russell Mills, Inc. Apparatus for folding and stacking garment parts. 3,794,224, Cl. 223-37.000.

Adaptronics, Inc.: *See—*
Barron, Roger L.; and Cleveland, Dixon, 3,794,271.

Addressograph-Multigraph Corporation: *See—*
McVey, Charles W., 3,793,947.

Adler, Edwin I., to Atlas Braid Company. Tension let off device for a knitting machine. 3,793,852, Cl. 66-152.000.

Advanced Memory Systems, Inc.: *See—*
Berding, Andrew R., 3,794,819.
Bernacchi, Gerald Roy, 3,794,861.

A.E.I. Telecommunications (Canada) Limited: *See—*
Hicks, Percy W.; and Gale, Michael R., 3,794,775.

Aerojet-General Corporation, mesne: *See—*
Heinen, Irving J., 3,793,893.

Aeronca, Inc.: *See—*
Weise, Carl A., 3,794,246.

Agfa-Gevaert Aktiengesellschaft: *See—*
Hujer, Friedrich, 3,793,915.
Krafft, Werner; and Kruck, Peter, 3,794,513.
Sobel, Johannes; Nittel, Fritz; Pelz, Willibald; and Himmelmann, Wolfgang, 3,794,493.

Ahern, John R.: *See—*
Lazet, Frank J.; and Ahern, John R., 3,794,475.

Ahlgren, Nils Harald. Method of dismantling framework structures. 3,793,702, Cl. 29-426.000.

Aiguesvives, Armando A.: *See—*
Godwin, Gilbert A.; and Aiguesvives, Armando A., 3,794,815.

Air Balance, Inc.: *See—*
Tarnoff, Sherwin S., 3,793,932.

Air Products and Chemicals, Inc.: *See—*
Klasson, George A., 3,794,806.

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Terrell, Ross C., 3,794,688.

Aisin Seiki Kabushiki Kaisha: *See—*
Hida, Takashi; Sakakibara, Naoji; and Hashimoto, Nobuyuki, 3,794,971.

Ajax Manufacturing Company, The: *See—*
Logan, Warner C., 3,793,872.

Akashi, Goro; Fujiyama, Masaaki; Kasuga, Akira; Yamada, Yasuyuki; Suzuki, Osamu; Nakamura, Matsuaki; Sega, Kenji; and Kato, Kiroshi, to Fuji Photo Film Co., Ltd. Process for the production of a magnetic record member. 3,794,519, Cl. 117-235.000.

Ake Malmgrens Mekaniska Vekstad AB: *See—*
Malmoren, Per Ake; and Johansson, Kurt Eilert, 3,794,130.

Aktiebolaget Electrolux: *See—*
Hagdorn, Manfred Otto; Palmeth, Torsten Birger; and Ragnar, Jean Ivan, 3,794,242.

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Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Someya, Taichi, 3,794,692.

Akzo N.V.: *See—*
Bik, Joannes Dominicus, 3,794,701.

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Lee, Wei Hwa; Reimann, Hans P.; and Al-Mashat, Abdul J., 3,794,739.

Alarm Device Manufacturing Company; a division of Pittway Corporation: *See—*
Guthart, Leo A., 3,794,991.

Alberight, Charles Jere; Fitch, Clifford E., Sr.; and Fitch, Clifford, Jr. Apparatus for cooking food in hot non-aqueous liquids under pressure. 3,793,940, Cl. 99-408.000.

Albers, Rolf G.: *See—*
Brasch, Jerome F.; and Albers, Rolf G., 3,794,810.

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Wirth, Christian; and Albi, George J., 3,794,548.

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Alburn, Harvey E.: *See—*
Dvonch, William; and Alburn, Harvey E., 3,794,678.

Alco Standard Corporation: *See—*
Newell, Stephen D., 3,794,064.

Alexander, Willard E.: *See—*
Dennis, Kent S.; and Alexander, Willard E., 3,794,616.

Alexandrescu, Mihail: *See—*
Contantinescu, Petre B.; Barthon, Stefan; Dumitrescu, Constantin; and Alexandrescu, Mihail, 3,793,930.

Alexeev, Anatoly Anatolievich: *See—*
Tarasenko, Leonid Grigorievich; Kuperman, Abram Yakovlevich; Noskov, Felix Pavlovich; Derevyagina, Irina Sergeevna; Malkus, Boris Lvovich; Bernshtein, Naum Davydovich; Alexeev, Anatoly Anatolievich; and Vishnyakov, Anatoly Nikolaevich, 3,794,254.

Alexeeva, Tatyana Vasilievna: *See—*
Tarasenko, Leonid Grigorievich; Kuperman, Abram Yakovlevich; Noskov, Felix Pavlovich; Derevyagina, Irina Sergeevna; Malkus, Boris Lvovich; Bernshtein, Naum Davydovich; Alexeev, Anatoly Anatolievich; and Vishnyakov, Anatoly Nikolaevich, 3,794,254.

Alferov, Jury Fedorovich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,794,104.

Alkco Manufacturing Co.: *See—*
Hitzler, Robert L., 3,794,830.

Allen, Herbert, to Cameron Iron Works, Inc. Press. 3,793,870, Cl. 72-255.000.

Allen, William G.; Le Velle, James A.; and Schuh, Frank J., to Atlantic Richfield Company. Well production. 3,794,358, Cl. 285-47.000.

Allied Chemical Corporation: *See—*
Barton, Oliver A., 3,794,590.
Beringer, Charles William; and Wilder, Marion Archer, Jr., 3,793,817.
Lofquist, Robert Alden; Saunders, Peter Reginald; and Weedon, Gene Clyde, 3,794,464.
Loomba, Yogendra S., 3,794,211.
Wells, Rodney Lee; and Crescentini, Lamberto, 3,794,631.

Allington, Trevor Richard: *See—*
Degenkolb, Robert Stephen; Allington, Trevor Richard; Wang, Yin Huai; and Oakes, Martin, 3,793,717.

Allis-Chalmers Corporation: *See—*
Khatti, Ramkishan, 3,793,831.
Rossi, Eugene F., 3,794,483.

Allitalia Import-Export Inc.: *See—*
Cufrini, Franco, 3,793,736.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Lindblom, Georg; and Olsson, Karl-Erik, 3,794,908.

Alpha Metals, Inc.; *See—*
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Anderson, Raymond Paul, to Custom Resins, Inc., mesne. Highly transparent linear polyamides from caprolactam and a mixture of diaminobicyclohexyls and a dibasic organic acid. 3,794,624, Cl. 260-78.001.
Anderson, Richard D.; Azelborn, Nicolas A.; and Wade, Wallace R., to Ford Motor Company. Isokinetic sampling probe. 3,793,887, Cl. 73-421.50r.
Anderson, Robert N.; and Parlee, Norman A. D., to Parlee Anderson Corporation. Carbothermic reduction method for converting metal oxides to metal form. 3,794,482, Cl. 75-84.10r.
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August, Paul. Device for the after treatment of exhaust gases of an internal combustion engine. 3,793,830, Cl. 60-288.000.
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Bauer, Benjamin B., to Columbia Broadcasting Systems, Inc. Four-channel decoder with improved gain control. 3,794,781, Cl. 179-16.00g.
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Berbalk, Hermann, to Gebruder Boehringer Gesellschaft mit beschrankter Haftung. Method for machining the stroke bearings and line bearings of a crank shaft. 3,793,687, Cl. 29-6.000.
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Bertrams, Johannes Kurt. Connector. 3,794,955, Cl. 339-211.00r.
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Bevlaqur, Peter J.: *See—*
Sexton, James P., 3,793,800.
Beyer, Stanley J.; and Lukes, Robert M., to General Electric Company. Regeneration of ferric chloride copper etching solutions. 3,794,571, Cl. 204-94.000.
Bhatia, Staya P.; Prahacs, Steven; De Souza, Thomas E.; and Jones, Herbert G., to Pulp and Paper Research Institute of Canada. Use of phenolic compounds for the sinultgneous absorption and of objectionably odorferous sulphur compounds from a gaseous stream 3,794,711, Cl. 423-224.000.
Bialek, Norman. Chess game apparatus including dice. 3,794,326, Cl. 273-131.0kc.
Bielski, Edward T.; Lackey, Daryl L.; and Theiss, Russell V. Apparatus for processing heat-decomposable non-gaseous materials. 3,794,565, Cl. 202-100.000.
Biermann, William A.; and Rice, John S., to Controls Company of America. Wax element diaphragm and seal. 3,793,837, Cl. 60-527.000.
Biersack, Horst, to Impex-Essen GmbH. Electrically operated hammer drill. 3,794,124, Cl. 173-104.000.
Bik, Joannes Dominicus, to Akzo N.V. Process for the preparation of hexa-alkoxyphosphazene. 3,794,701, Cl. 260-973.000.
Bilz, Otto. Stud driver. 3,793,912, Cl. 81-52.300.
Binder, Kurt, to Berhenhoff & Co., KG. Method and apparatus for continuously casting mon-ferrous metals in a graphite-glassy substance mold. 3,794,102, Cl. 164-82.000.
Binkley Company, The: *See—*
Baxter, Bobby G., 3,794,186.
Binks, Chester J.; and Moser, Joseph M., to Restaurant Technology, Inc. Steam injector and spatula. 3,794,016, Cl. 126-369.000.
Biomarine Industries, Inc.: *See—*
Burt, John F., Jr., 3,794,059.
Birch, Philip L.; and Morrison, Robert W., to Ford Motor Company. Variable tip clearance engine cooling fan shroud. 3,794,001, Cl. 123-41.050.
Bissing, Donald E.: *See—*
Gash, Virgil W.; and Bissing, Donald E., 3,794,679.
Bivens, Donald B.; Patton, Leo W.; and Wiggill, John B., to Du Pont de Nemours, E. I., and Company. Method for in situ reconditioning of iron catalyst bed. 3,794,602, Cl. 252-412.000.
Black and Decker Manufacturing Company, The: *See—*
Sadow, Peter T., Jr.; Baum, Gordon B.; and Hurn, Richard L., 3,793,776.
Black Clawson Company, The: *See—*
Fischer, Eduard F.; Farnworth, Edwin; and Christensen, Elmer, 3,794,387.
Harmon, Paul E.; and Phelps, Richard W., 3,794,255.
Black, James B.; and Shull, Bradford K., to Twin Disc Incorporated. Gas turbine starting and auxiliary turning mechanism. 3,793,905, Cl. 74-661.000.
Black, William Brown. Quarl burner. 3,793,995, Cl. 122-235.00b.
Blackstone Corporation: *See—*
Antonevich, John N., 3,793,704.
Blackwell, Willis A.: *See—*
Riesbeck, Laverne J.; and Blackwell, Willis A., 3,794,165.
Blakey, Alexander G., to General Dynamics Corporation. Measuring and locating system components. 3,793,738, Cl. 33-180.00r.
Blankenburg, Gunther, to U.S. Philips Corporation. System of variable capacity diodes. 3,794,942, Cl. 334-15.000.
Blazek, Frank V.; Dufer, William B.; Franke, Raymond C.; and Schatzel, Philip R., to Westinghouse Air Brake Company. Train speed control system. 3,794,833, Cl. 246-63.00c.
Blempel, Manfred: *See—*
Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; and Blempel, Manfred, 3,794,653.
Blocker, William C. Flared cone filter. 3,794,180, Cl. 210-445.000.
Blomgren, Oscar C., Jr.: *See—*
Blomgren, Oscar C., Sr.; Blomgren, Oscar C., Jr.; and Lyczko, Felix J., 3,794,111.
Blomgren, Oscar C., Sr.; Blomgren, Oscar C., Jr.; and Lyczko, Felix J., to Inter-Probe, Inc. Cooling apparatus for heat exchangers. 3,794,111, Cl. 165-1.000.
Bloom, Leonard, 2/3 to Rebold, Jerome I. Electric douche. 3,794,031, Cl. 128-230.000.
Bloom, Stanley M.; Borror, Alan L.; and Greenwald, Richard B., to Polaroid Corporation. Color diffusion transfer film with incorporated dye and desensitizing agent precursor. 3,794,485, Cl. 96-3.000.
Bloomfield, Jack; Branton, Paul; and Grange, Kenneth, to British Railways Board. Support systems for the seated human body. 3,794,382, Cl. 297-457.000.
Blower, Warren A.: *See—*
Shields, Robert G.; Blower, Warren A.; and Hatch, Edmond K., 3,794,103.

Blue Bell, Inc.: *See—*
Bryan, Carney J.; and Ful, James B., 3,794,230.

Boctin, Jean: *See—*
Lackme, Claude; Digonnet, Albert; Colas, Louis; Boctin, Jean; Dal Pont, Jean-Pierre; and Papillon, Bernard, 3,794,582.

Bodge, Clifford A., to Texas Instruments, Incorporated. Rocker actuated circuit breaker having improved means for function indication. 3,794,800, Cl. 200-308.000.

Boehner, Beat; and Dawes, Dag, to Ciba-Geigy Corporation. Triazolyl carbamates. 3,794,661, Cl. 260-308.00r.

Boehringer, C. H., Sohn: *See—*
Sehring, Richard; and Buck, Wolfgang, 3,794,700.

Boehringer Ingelheim GmbH: *See—*
Maier, Roland; and Sauter, Robert, 3,794,725.
Pieper, Helmut; Kruger, Gerd; Noll, Klaus-Reinhold; Keck, Johannes; and Kahling, Joachim, 3,794,645.

Boehringer Mannheim GmbH: *See—*
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Neimann, Gunter; and Thum, Waldemar, 3,794,562.
Wiedemann, Fritz; Thiel, Max; Stach, Kurt; Roesch, Egon; and Hardebeck, Klaus, 3,794,637.

Boelter, Donald A., to General Aviation Electronics, Inc. Coupled bandstop/bandpass filter. 3,794,938, Cl. 333-70.00r.

Boersma, Robert P.; and Chuang, Vincent T., to Union Carbide Corporation. Novel organosilicon adducts. 3,794,673, Cl. 260-448.20b.

Boertje, Arie Leendert; and Philpott, Peter John, to Lever Brothers Company. Process for frying buoyant food pieces. 3,794,745, Cl. 426-439.000.

Boles, Ralph C., Jr.: *See—*
Long, Raymond E.; and Boles, Ralph C., Jr., 3,794,801.

Bollig, George; Grothe, Horst; and Eisen, Josef, to Schloemann Aktiengesellschaft. Plural segmented guiding assembly for a continuous casting. 3,794,107, Cl. 164-282.000.

Bolt Associates, Inc.: *See—*
Chelminski, Stephen V., 3,793,844.

Bomrardier Limited: *See—*
Perreault, Jules, 3,794,142.

Bonczyk, Bruno C., to Alton Box Board Company. Convenience handle means for carton. 3,794,239, Cl. 229-52.00d.

Bonham, Ralph D. Remotely steered troller. 3,793,761, Cl. 43-26.100.

Bonimi, Jaime A., to Tapeler Corporation. Apparatus for transferring and affixing articles to either one of two angularly disposed surfaces. 3,794,543, Cl. 156-566.000.

Booman, Glenn L.; and Delmastro, Joseph R., to United States of America, Atomic Energy Commission. Porous metal insulator sandwich membrane. 3,794,174, Cl. 210-321.000.

Borg-Warner Corporation: *See—*
Hurd, Charles B.; Richmond, Gerald W.; and Richmond, Leo E., 3,794,393.
Schissler, Walter J., 3,794,541.

Borror, Alan L.: *See—*
Bloom, Stanley M.; Borror, Alan L.; and Greenwald, Richard B., 3,794,485.

Borsenberger, Paul M.; Guevara, Alfredo R.; and Manthey, Joseph W., to Eastman Kodak Company. Amplification of low-density polyene images. 3,794,491, Cl. 96-48.00r.

Boscaino, Lorenzo. Pneumatic tire. 3,794,093, Cl. 152-208.000.

Bosch, Robert, G.m.b.H.: *See—*
Espenschied, Helmut; Rothfuss, Georg; and Sauer, Joseph, 3,793,898.
Wessel, Wolf, 3,794,002.

Boston Insulated Wire & Cable Co.: *See—*
Garshick, Alfred, 3,794,750.

Bouchei, Claude; and Tomasovitch, Jean, to International Standard Electric Corporation. Distributor for a centrally controlled telephone switching system. 3,794,777, Cl. 179-18.0gf.

Boudewijns, Henricus Petrus Johannes; and Creefkes, Johannes Anton, to U.S. Philips Corporation. Speech-controlled switching arrangement. 3,794,763, Cl. 179-1.0vc.

Bounds, Joe W.: *See—*
Goldstein, Lynn; and Bounds, Joe W., 3,794,321.

Bourbonnaud, Louis, to Societe Creusot-Loire. Apparatus for angular and axial regulation of a printing cylinder. 3,793,899, Cl. 74-397.000.

Bourne, Ronald Frederick, to Asbestos Grading Equipment Company, The. Filters for separating dust from air. 3,793,811, Cl. 55-294.000.

Bourns, Inc.: *See—*
Frey, Sydney W., Jr.; and Gaa, Donald L., 3,794,278.

Bouwhuis, Gijsbertus: *See—*
Ian, Sing Liong; Hofman, Jan August Marcel; and Bouwhuis, Gijsbertus, 3,794,408.

Bove, Peter Richard: *See—*
Cosentino, Louis Ciro; and Bove, Peter Richard, 3,794,841.

Bower, Barton K., to Hercules Incorporated. Tris (bicycloheptyl) chromium compounds and use as polymerication catalysts. 3,794,628, Cl. 260-94.90b.

Bowerman, William J., to BRS, Inc. Athletic shoe for artificial turf. 3,793,750, Cl. 36-59.00c.

Bowers, Richard C.: *See—*
Smith, Vigo N.; and Bowers, Richard C., 3,794,425.

Bowles Fluidics Corporation: *See—*
Moore, Larry R.; and Turek, Robert F., 3,794,055.
Turek, Robert P., 3,794,005.

Bowling, Dan P. Power driven surface finishing device. 3,793,782, Cl. 51-170.0pt.

BP Chemicals, Limited: *See—*
Stermann, Peter Henry, 3,794,638.

Brackmann, Warren A.; and Di Ianni, Daniel, to Rothmans of Pall Mall Canada Limited. Conveyor. 3,794,156, Cl. 198-136.000.

Bradley, Charles J. Therapeutic apparatus for the retardation of emphysema. 3,794,023, Cl. 128-68.000.

Bradley, Robert Auldom. Electric railway speed control. 3,794,897, Cl. 318-270.000.

Brandon, Clarence W. Use of liquefiable gas to control liquid flow in permeable formations. 3,794,114, Cl. 166-249.000.

Brandt, Gerald H.: *See—*
Schmidt, Donald L.; Cooper, Ronald H.; and Brandt, Gerald H., 3,794,506.

Branton, Paul: *See—*
Bloomfield, Jack; Branton, Paul; and Grange, Kenneth, 3,794,382.

Brasch, Jerome F.; and Albers, Rolf G., to Brasch Manufacturing Company. Electrical heating apparatus for circular ducts. 3,794,810, Cl. 219-366.000.

Brasch Manufacturing Company: *See—*
Brasch, Jerome F.; and Albers, Rolf G., 3,794,810.

Braun Aktiengesellschaft: *See—*
Messinger, Werner; Zimmermann, Klaus; and Seiffert, Florian, 3,793,724.

Braunschweigische Maschinenbauanstalt: *See—*
Dietzel, Walter; and Matusch, Siegfried, 3,794,521.

Bray, Donald T., to Desalination Systems, Inc. Storage and dispensing apparatus for a reverse osmosis water purification system. 3,794,172, Cl. 210-257.000.

Bray, Donald T., to Desalination Systems, Inc. Valve for reverse osmosis purification and storage system. 3,794,173, Cl. 210-257.000.

Brazee, Donald K., to Lambert Engineering Company. Motor means for space heater and method of use. 3,794,461, Cl. 432-29.000.

Breer, Karl; and Schulte, Klaus, to Bayer Aktiengesellschaft. Introduction of reactants into moulds. 3,794,451, Cl. 425-4.000.

Brennan, David John; and Williams, Loraine Leonard, to Lucas Aerospace Limited. Mounting arrangements for printed circuit boards. 3,794,887, Cl. 317-101.0dh.

Brenner, Natalie S. Suction system for skin treatment. 3,794,035, Cl. 128-300.000.

Breslow, David S., to Hercules Incorporated. Divinyl ether-maleic anhydride copolymer. 3,794,622, Cl. 260-78.5bb.

Breslow, Donald H., to Itek Corporation. Servomoter driven encoder error evaluation system. 3,794,899, Cl. 318-602.000.

Brewer, John C., to Garbalizer Corporation of America. Process and system for recovering carbon. 3,794,250, Cl. 241-21.000.

Brice, George H., to Uniroyal, Inc. Process for oil-extending rubber. 3,794,611, Cl. 260-33.6ag.

Brinil S.A.: *See—*
Martinotti, Luigi, 3,793,970.

British Leyland Truck and Bus Division Limited: *See—*
Hughes, John Oliver Philip, 3,794,109.

British Railways Board: *See—*
Bloomfield, Jack; Branton, Paul; and Grange, Kenneth, 3,794,382.

Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, to National Research Development Corporation. Three-phase, pole-changing motor. 3,794,870, Cl. 310-180.000.

Brockman, Henry J.; and Gloomis, Lawrence A., to General Motors Corporation. Occupant restraint system. 3,794,346, Cl. 280-150.0ab.

Brodasky, Thomas F.; and Reusser, Fritz, to Upjohn Company, The. Antibiotic steffimycin B and process for the preparation thereof. 3,794,721, Cl. 424-120.000.

Broggi, Allen J.: *See—*
Ulrich, Henri; Stuber, Fred A.; and Broggi, Allen J., 3,794,626.

Bromberek, Richard J.; Oliver, Robert J.; Yeh, Rudolph E.; and Holloway, Gale A., to International Harvester Company. Hydraulic self-leveling device for a loader bucket. 3,794,199, Cl. 214-763.000.

Bronstert, Klaus; Kastning, Ernst-Guenther; deceased (by Kastning, Marie-Louise Hermine; heir); Kurze, Joachim; Ladenberger, Volker; and Stein, Dieter, said Bronstert, said Joachim, said Volker and said Stein assors. to Badische Anilin- und Soda-Fabrik Aktengesellschaft. Modified styrene polymers providing impact-resistant molded articles. 3,794,697, Cl. 260-876.00r.

Brooks, Bertram, to Carolina Enterprises, Inc. One-piece plastic pool. 3,793,653, Cl. 4-172.000.

Brorsson, Bjorn: *See—*
Kuster, Heinz; and Brorsson, Bjorn, 3,794,082.

Brouwer, Geert, to U.S. Philips Corporation. Viscosity pump. 3,794,449, Cl. 415-90.000.

Brown, Boveri & Company Limited: *See—*
Weimann, Klaus; Muller, Elmar; Baab, Heinz Joachim; and Pape, Jurgen, 3,794,890.

Brown, Jesse L., to Eastman Kodak Company. Sequestering agent solutions stabilized with lithium ions. 3,794,591, Cl. 252-178.000.

Brown, Maurice H., to Pemcor, Inc. Temperature compensated electron beam convergence apparatus. 3,794,946, Cl. 335-211.000.

Brown, Melancthon S.; deceased (by Kohn, Gustave K.; administrator), to Chevron Research Company. N-substituted arylcarbamoyl sulfides used as insecticides. 3,794,733, Cl. 424-300.000.

Brownlee, Thomas Harland; and Matsuda, Ken, to American Cyanamid Company. Product for the formation of fluorescent images. 3,794,512, Cl. 117-33.50r.

BRS, Inc.: *See—*
Bowerman, William J., 3,793,750.

Bruce, William F., to American Home Products Corporation. Di(lower) alkylaminoa and heteroamino-(lower) alkyl-alpha,alpha,alpha-trifluoro-M-toluic acid esters and derivatives. 3,794,677, Cl. 260-477.000.

Brucken, Byron L., to General Motors Corporation. Bulkhead mounting arrangement for tub seal and drive mechanism. 3,793,854, Cl. 68-23.700.

Bruckner, Gyorgyi: *See—*
Gorog, Katalin, nee Privitizer; Bruckner, Gyorgyi; Farkas, Kalman; Grega, Erzsebet; Marosvolgyi, Sandor; Pinter, Zoltan; and Szilagyi, Gyula, 3,794,641.

Bruderer, Werner: *See—*
Yanagida, Mareo; Saranoue, Susumu; Nakagawa, Hideyuki; and Bruderer, Werner, 3,794,218.

Brunton, John David, to Taylor Woodrow Construction Limited. Load sensors. 3,793,878, Cl. 73-88.50r.

Bryan, Carney J.; and Ful, James B., to Blue Bell, Inc. Work piece guide system. 3,794,230, Cl. 226-3.000.

Bryant, Ellis H., Jr.: *See—*
Smith, Leary W.; and Bryant, Ellis H., Jr., 3,794,778.

Bryant, Jack A., to Electronics Corporation of America. Sensing apparatus. 3,794,812, Cl. 235-61.11e.

Buban, Elmer E.: *See—*
Cotabish, Harry N.; Wise, Layton A.; and Buban, Elmer E., 3,794,030.

Buccellato, Anthony: *See—*
Cwycyshyn, Walter; Buccellato, Anthony; and Hoffman, Henry C., 3,794,350.

Buchel, Karl-Heinz: *See—*
Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; and Blempel, Manfred, 3,794,653.

Buchele, Wesley F.; and Peters, Leo C., to Iowa State University Research Foundation Inc. Safety door for the unloading mechanism of self-unloading wagons. 3,794,198, Cl. 214-519.000.

Buck, Gordon H.; Northrop, John H.; and Willis, Don C., to Mattel, Inc. Game phonograph. 3,794,330, Cl. 274-1.00g.

Buck, Gwynne: *See—*
Buck, Willard E., 3,794,216.

Buck, Willard E.; deceased (by Buck, Gwynne; executrix), to Spray-A-Matic Products, Inc. Pressure powered aerosol timer. 3,794,216, Cl. 222-70.000.

Buck, Wolfgang: *See—*
Sehring, Richard; and Buck, Wolfgang, 3,794,700.

Buckley, Robert E.: *See—*
Weiss, Morris; and Buckley, Robert E., 3,794,838.

Buecherl, Erwin: *See—*
Poschenrieder, Werner; and Buecherl, Erwin, 3,794,936.

Buell, Kenneth B., to Procter & Gamble Company, The. Disposable diaper with tape fastener having a release liner which also provides a means to grip and remove the topsheet. 3,794,038, Cl. 128-287.000.

Building Structural Systems, Inc.: *See—*
Greenamyer, Charles E., 3,793,789.

Bullough, William Alan. Combined viscosity pump and electric motor. 3,794,447, Cl. 417-356.000.

Bunish, Steve; and Landinger, Carl C., to Anaconda Company, The. High voltage cable system free from metallic shielding. 3,794,752, Cl. 174-115.000.

Bunn-O-Matic Corporation: *See—*
Martin, John C., 3,793,934.
Martin, John C., 3,793,935.

Burakov, Savely Leonidovich: *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Evgeny Emelyanovich; Nikolaenko, Evgeny Gigorievich; Stepnov, Alexandr Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,794,106.

Bures, Ladislav: *See—*
Rajnoha, Jaroslav; Bures, Ladislav; and Olezal, Josef, 3,793,820.

Burkhardt, Claus; Baichle, Karl; and Schnell, Hermann, to Bayer Aktiengesellschaft. Use of $\beta$-dicarbonyl compounds derived from cyclopentanone as additional accelerators for polyester moulding and coating masses. 3,794,695, Cl. 260-863.000.

Burkhardt, James H., Jr.: *See—*
Lay, Clark M.; Burkhardt, James H., Jr.; and Davidson, Thomas W., 3,794,814.

Burnhard, Fort; Lee, Thomas G.; and Schuster, John R., to McDonnell Douglas Corporation. Transpiration cooling structure. 3,793,861, Cl. 62-315.000.

Burns, Bernard J.: *See—*
Diamond, Julius; Douglas, George H.; and Burns, Bernard J., 3,794,685.

Burroughs Corporation: *See—*
Colwill, Richard H.; Dewey, William E.; Vanbennekom, Hans Lochmann; and Mowry, William H., Jr., 3,794,228.
Mueller, Harry B.; and Reid, Gilbert R., 3,794,522.
Walenta, Ivan Earl, 3,794,987.

Burrow, Reginald Edwin: *See—*
Davies, Ivor Llewellyn; and Burrow, Reginald Edwin, 3,794,559.

Burt, John F., Jr., to Biomarine Industries, Inc. Electronic monitoring control and display apparatus for breathing gas system. 3,794,059, Cl. 137-93.000.

Butler, Bryan V.: *See—*
Larralde, Edward; and Butler, Bryan V., 3,793,835.

Butler Manufacturing Company: *See—*
Love, Samuel L.; and Swain, Paul E., 3,793,790.

Butler, Robert F.: *See—*
Stout, Lilburn Grady; Butler, Robert F.; and Morris, James Allen, 3,793,957.

Bylander, Ernest G.; and Jarman, Hall B. Process for fabricating GE:HG infrared detector arrays and resulting article of manufacture. 3,794,883, Cl. 317-234.00r.

Bylander, Ernest Gerald, to Texas Instruments, Incorporated. Integrated circuit assembly using etched metal patterns of flexible insulating film. 3,793,714, Cl. 29-583.000.

Bylo, John J. Marine transport. 3,793,974, Cl. 114-43.500.

Bynum, Johnnie J. Pressure sensitive control for pump regulator. 3,794,789, Cl. 200-83.00z.

Cadiou, Jean Georges, to Societe Anonyme Automobiles Citroen. Windshield wiper control means. 3,794,847, Cl. 307-117.000.

Cahill, Steven P.; and Pateuk, Constantine J., to Honeywell Information Systems, Inc. Axially and rotationally moveable print head. 3,794,150, Cl. 197-55.000.

Caldemeyer, Daniel F. Footrest for reclining chair. 3,794,381, Cl. 297-430.000.

Caldwell, Eugene L.: *See—*
France, Jimmie J.; Neubert, Fred J.; Caldwell, Eugene L.; Springer, Howard D.; and Sutton, Max E., 3,794,383.

Camber International (England) Limited: *See—*
Wills-Moren, William James; and Goadby, Walter, 3,793,850.

Cameron Iron Works, Inc.: *See—*
Allen, Herbert, 3,793,870.

Campbell, William B.; and Adamson, Arthur P., to General Electric Company. Anti-icing spinner construction. 3,794,444, Cl. 416-201.000.

Campiani, Noem Mabel: *See—*
Spano, Eduardo Victor; Sueiro, Otilia; Gonzalez, Oscar Pedro; and Campiani, Noem Mabel, 3,794,087.

Canadian Patents and Development Limited: *See—*
Raal, Johan D., 3,794,566.

Canham, William H. Sanitary disposable holder for articles of personal hygiene. 3,794,181, Cl. 211-65.000.

Canon Kabushiki Kaisha: *See—*
Kano, Ichiro; and Yamada, Yu, 3,794,421.
Kishimoto, Juji, 3,794,990.
Komiya, Takao; Tosaka, Umi; Ihara, Takashi; Matsuo, Takehiko; and Ohara, Katsunobu, 3,794,539.
Petersdorf, Gerhard, 3,794,423.

Cantrell, William T., to Square D Company. Raintight enclosure with multiple covers. 3,794,205, Cl. 220-29.000.

Capra, Uberto. Vehicle-washing apparatus. 3,793,667, Cl. 15-21.00e.

Carey, Andrew J.: *See—*
Huffman, Donald D.; and Carey, Andrew J., 3,794,832.

Caring, Alfred B., to Belding Heminway Company, Inc. Sewing tape. 3,794,554, Cl. 161-109.000.

Carlson, Raymond H.; and Reiland, Bernard F., to Textron, Inc. Locking fastener. 3,794,092, Cl. 151-22.000.

Carolina Enterprises, Inc.: *See—*
Brooks, Bertram, 3,793,653.

Carolina Narrow Fabric Company: *See—*
Nisbet, John L.; and Woodall, Hubert C., Jr., 3,793,686.

Carr, Ronald B., to United States of America, Atomic Energy Commission. Compact laser amplifier system. 3,794,929, Cl. 330-4.300.

Carroll, Michael O.; and Shirek, Lawrence J., to Thermo King Corporation. Refrigerant throttling valve. 3,794,063, Cl. 137-505.260.

Carroll, Robert G. Pressure regulated inflatable cuff for an endotracheal or tracheostomy tube. 3,794,036, Cl. 128-351.000.

Carter, Bob: *See—*
Osborn, William; and Carter, Bob, 3,794,922.

Carter, Ronald E.; and Clifford, Jack S., to Sealed Power Corporation. Device for automatically loading an oil ring spacer-expander into the oil ring groove of a piston. 3,793,695, Cl. 29-211.00r.

Carter, Spencer Douglas, to American Cyanamid Company. Substituted nitroimidazolylthiadiazolinones and method of using the same. 3,794,658, Cl. 260-302.00h.

Carter, Spencer Douglas; and Berkelhammer, Gerald, to American Cyanamid Company. Method of controlling coccidiosis by the use of a nitroimidazolylthiadiazolinone. 3,794,727, Cl. 424-270.000.

Carter, Warren E.: *See—*
Songer, Robert D.; and Carter, Warren E., 3,793,656.

Cash, George H.: *See—*
Tomany, James P.; and Cash, George H., 3,793,809.

Casstevens, Floyd C., Jr.; and Henry, Truett C., to F & W Products, Inc. Holder for ties and the like. 3,793,681, Cl. 24-60.000.

Cates, Robert E.; and Mitchell, Robert M., to Marley Company, The. Pneumatic weir water level control for cooling tower hot water distribution basin. 3,794,304, Cl. 261-111.000.

Ceauselu, Constantin N.: *See—*
Teodorescu, Constantin Gh.; Ceauselu, Constantin N.; and Vasilescu, Grigore Vlasie, 3,794,137.

Cecchi, Giannangiolo: *See—*
Lega, Berlando; and Cecchi, Giannangiolo, 3,794,177.

Cegedur Societe de Transformation de l'Aluminium Pechiney: *See—*
Baumann, Bernard, 3,794,203.

Centre de Recherches Metallurgiques-Centrum Voor Research In De Metallurgie: *See—*
Ponghis, Nicolas Gerassimos; and Vanosmael, Claude Henri, 3,794,308.

Chadha, Rajendra Nath; Crawford, James Edwin; and Getson, John Charles, said Chadha, said Lewis and said Getson, assors. to Stauffer Chemical Company. Room temperature vulcanizable graft copolymers on silicone containing backbone. 3,794,694, Cl. 260-827.00.

Chandler, O. Wayne, to Commercial Solvents Corporation. Nitromethane explosive with a foam and microspheres of air. 3,794,534, Cl. 149-2.000.

Charlson, Thomas M. Horseshoe. 3,794,120, Cl. 168-24.000.

Charske, Charles J., to Esso Production Research Company. Marine seismic cable buoyancy system. 3,794,965, Cl. 340-7.0pc.

Chartet, Andre, to Societe Anonyme des Usines Chausson. Process for the connection by setting of collectors on water-boxes of heat exchangers. 3,793,701, Cl. 29-421.000.

Check, Mathias M., 25% to Miller, Alfred E. Automatic wire clamp feeding device for bottles. 3,794,212, Cl. 221-212.000.

Cheek, Edward E.; and Sabin, Raymond H., to McDowell-Wellman Engineering Company. Railroad car spotting and wheel locking apparatus. 3,793,964, Cl. 104-162.000.

Chelminski, Stephen V., to Bolt Associates, Inc. System for increasing the load-bearing capacity of soil. 3,793,844, Cl. 61-63.000.

Chem-Trol Pollution Services Inc.: *See—*
Wagner, Louis E.; McCord, Andrew T.; and Dorn, Joseph A., 3,794,299.

Chemed Corporation: *See—*
Nogueira, Andrew; and Packer, Harry J., 3,794,524.

Chemiefac, GmbH, Firma: *See—*
Schroieler, Georg, 3,794,549.

Chen, Ying-Ho: *See—*
Welstead, William John, Jr.; and Chen, Ying-Ho, 3,794,646.

Chen, You Min, to Ofmart Corporation, The. Gauge for determining the percentage by weight of moisture contained in a bulk material transported on a moving conveyor. 3,794,843, Cl. 250-359.000.

Chesters, Allan Knight, to Secretary of State of Defence. Combustion system deflector plate. 3,793,828, Cl. 60-39.660.

Chevron Research Company: *See—*
Brown, Melancthon S., 3,794,733.
Freenor, Francis J., III, 3,794,699.
Merrill, John J., 3,794,710.

Chia, Enrique C.; and Schoerner, Roger J., to Southwire Company. Master aluminum nickel alloy. 3,794,484, Cl. 75-147.000.

Chillon, Claude: *See—*
Froumajou, Armand; and Chillon, Claude, 3,794,342.

Chitayat, Anwar. Method and apparatus for photographing by artificial illumination. 3,794,422, Cl. 355-67.000.

Chouings, Leslie Cyril, to Automotive Products Company Limited. Valve devixes. 3,794,076, Cl. 137-115.000.

Christensen, Elmer: *See—*
Fischer, Eduard F.; Farnworth, Edwin; and Christensen, Elmer, 3,794,387.

Christie, Christopher E.; Fedor, James R.; Harwell, Ishmael S.; and Riggs, Robert S., to Goodyear Tire & Rubber Company, The. Method for making a rolling lobe diaphragm. 3,794,538, Cl. 156-187.000.

Christie, Christopher E.; and Martin, Eugene Earl, to Goodyear Tire & Rubber Company, The. Method for building a foam-inflated tire. 3,794,706, Cl. 264-45.000.

Christopher, Daryl J., to Raytheon Company. Coordinate generation system. 3,794,993, Cl. 343-5.0dp.

Chrokey, William J.; Ellis, Larry C.; and Heideman, Robert J., to Ace Controls, Inc. Adjustable stroke shock absorber. 3,794,309, Cl. 267-34.000.

Chuang, Vincent T.: *See—*
Boersma, Robert P.; and Chuang, Vincent T., 3,794,673.

Ciba-Geigy AG: *See—*
Eckert, Peter; Egli, Willi; and Osolin, Hans Georg, 3,794,544.

Ciba-Geigy Corporation: *See—*
Bateman, John H., 3,794,620.
Boehner, Beat; and Dawes, Dag, 3,794,661.
Dietrich, Henri; and Lehmann, Claude, 3,794,737.
Kamber, Bruno; and Rittel, Werner, 3,794,633.
Kleiner, Eduard Karl; and Knell, Martin, 3,794,623.
Rittel, Werner, 3,794,632.

Cichetti, Michael Peter, Jr.; and Kneuer, Joseph George, to Bell Telephone Laboratories, Incorporated. Cross-office connecting scheme for interconnecting multiplexers and central office terminals. 3,794,768, Cl. 179-15.0ba.

Cikalon-Vliesstoffwerk G.m.b.H.: *See—*
Lochner, Herbert, 3,794,553.

Ciliberti, David F.: *See—*
Scala, Luciano C.; and Ciliberti, David F., 3,794,510.

Cities Service Company: *See—*
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Cities Service Oil Company: *See—*
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Rosewald, Gary W., 3,793,888.

Clairol Incorporated: *See—*
Halasz, Alexander, 3,794,676.

Clark Equipment Company: *See—*
Kuhn, Patrick, 3,794,191.

Clark, Merlin Wayne. Ceiling lamp mounting. 3,794,962, Cl. 339-126.00r.

Clark, Thomas L. Deodorized pet relief station. 3,793,989, Cl. 119-1.000.

Clausing, Challiss I., to I-T-E Imperial Corporation. Open air GAP operation with static overload device. 3,794,889, Cl. 317-27.00r.

Clayton & Lambert Manufacturing Company: *See—*
Lambert, Charles F., Jr., 3,794,190.

Cleveland, Dixon: *See—*
Barron, Roger L.; and Cleveland, Dixon, 3,794,271.

Clevenger, James T.; and Stohler, John L., to Sperry Rand Corporation. Quick-attaching mechanism. 3,794,195, Cl. 214-145.000.

Clifford, Jack S.: *See—*
Carter, Ronald E.; and Clifford, Jack S., 3,793,695.

Cline, Carl F.: *See—*
Landingham, Richard L.; and Cline, Carl F., 3,794,551.

Coburn Optical Industries, Inc.: *See—*
Coburn, Orin W.; and Stith, Joe D., 3,794,314.

Coburn, Orin W.; and Stith, Joe D., to Coburn Optical Industries, Inc. Vacuum chuck for opthalmic lens finishing machinery. 3,794,314, Cl. 269-21.000.

Coenen, Renier Gertruda Hubertus; Kuiper, Adrianus; and Collaris, Maria Antonius Alphonsus Andreas, to U.S. Philips Corporation. Method of electrophoretically covering helically wound heating wires with an insulating layer. 3,794,593, Cl. 204-181.000.

Cogar Corporation: *See—*
Cogar, George R.; and Huyck, Arnold G., 3,794,980.

Cogar, George R.; and Huyck, Arnold G., to Cogar Corporation. Apparatus and method for controlling sequential execution of instructions and nesting of subroutines in a data processor. 3,794,980, Cl. 340-172.500.

Cohen, Abraham B.; and Tobias, Herbert A., to Du Pont de Nemours, E. I., and Company. Process and apparatus for delaminating an adherent receptor sheet on a sensitized element. 3,794,546, Cl. 156-344.000.

Colas, Louis: *See—*
Lackme, Claude; Digonnet, Albert; Colas, Louis; Boctin, Jean; Dal Pont, Jean-Pierre; and Papillon, Bernard, 3,794,582.

Colbridge, Thomas D., to Rack Engineering Company. Adjustable storage rack. 3,794,183, Cl. 211-176.000.

Cole, Thomas R., III; Kehr, William D.; and Wiitala, James R., to International Business Machines Corporation. Process for brazing a magnetic ceramic member to a metal member. 3,793,705, Cl. 29-473.100.

Collaris, Maria Antonius Alphonsus Andreas: *See—*
Coenen, Renier Gertruda Hubertus; Kuiper, Adrianus; and Collaris, Maria Antonius Alphonsus Andreas, 3,794,593.

Collin, Stanley, to Livingston and Doughty, Limited. Fluid pressure-operated piston/cylinder units. 3,793,925, Cl. 92-13.100.

Collins, John H. Adjustable split door frame. 3,793,788, Cl. 52-211.000.

Collins Radio Company: *See—*
Stump, Theodore M.; and Williford, Jerry G., 3,794,928.

Colomrani, Bruno; and Pacciarini, Antonio, to Industrie Pirelli S.p.A. Stitching apparatus for tire drum building machines. 3,794,542, Cl. 156-358.000.

Columbia Broadcasting Systems, Inc.: *See—*
Bauer, Benjamin B.; and Gravereaux, Daniel W., 3,794,780.
Bauer, Benjamin B., 3,794,781.

Colwill, Richard H.; Dewey, William E.; Vanbennekom, Hans Lochmann; and Mowry, William H., Jr., to Burroughs Corporation. Bursting and separating apparatus for continuous forms. 3,794,228, Cl. 225-93.000.

Combustion Engineering, Inc.: *See—*
Round, Byron Joseph; and Abolins, Eizens, 3,793,991.

Commercial Solvents Corporation: *See—*
Chandler, O. Wayne, 3,794,534.

Commisso, Nicholas D., to Mobil Oil Corporation. Covered container for serving food. 3,794,090, Cl. 150-.500.

Compagnie d'Electronique et de Piezo-Electricite C.E.P.E.: *See—*
Gibert, Guy; and Vidal, Pierre, 3,794,867.

Compagnie Francaise: *See—*
Steggerda, Willem A., 3,794,690.

Compagnie Generale de Geophysique: *See—*
Staron, Philippe, 3,794,978.

Compagnie Industrielle des Telecommunications: *See—*
Jacob, Jean-Baptiste; Renoulin, Roger; and Guezou, Jean, 3,794,773.

Concast AG: *See—*
Yanagida, Mareo; Saranoue, Susumu; Nakagawa, Hideyuki; and Bruderer, Werner, 3,794,218.

Conner, Charles J., to United States of America, Agriculture. Single bath chromic chloride mineral dyeing process for cellulosics. 3,794,466, Cl. 8-52.000.

Conner, James M.; and Salvador, Henry J., to Polaroid Corporation. Photographic apparatus for motion picture projection. 3,794,399, Cl. 312-244.000.

Conoflow Corporation: *See—*
Holben, Eugene F., 3,793,882.

Conroy, John J.: *See—*
Gottlieb, Milton; and Conroy, John J., 3,794,937.

Contantinescu, Petre B.; Barthon, Stefan; Dumitrescu, Constantin; and Alexandrescu, Mihail, to Institutul de Proiectori al Industriei Usoare. Adjustable deflector made of prefabricated reinforced concrete members. 3,793,930, Cl. 98-42.000.

Continental Can Company, Inc.: *See—*
Mohr, Glenn R., 3,794,802.

Continental Oil Company: *See—*

Kennedy, Eugene F., 3,794,601.

Controls Company of America: *See—*
Biermann, William A.; and Rice, John S., 3,793,837.

Converse, John O.; Korpi, Kenneth W.; and Diver, John R., to Hart-Carter Company. Vertical rotating screen separator. 3,794,166, Cl. 209-301.000.

Cooper, James Joseph, Jr., to International Telephone and Telegraph Corporation. Electrical connector. 3,794,963, Cl. 339-242.000.

Cooper, Ronald H.: *See—*
Schmidt, Donald L.; Cooper, Ronald H.; and Brandt, Gerald H., 3,794,506.

Copp, Goeve D. Towel vending machine for fabric-like articles and method. 3,794,148, Cl. 194-4.00c.

Corbineau, Jean G. Method of fashioning a dental prosthesis device and a temporary prosthesis device to put this method into effect. 3,793,728, Cl. 32-6.000.

Cordes, Linus F.: *See—*
Engeler, William E.; and Cordes, Linus F., 3,794,516.

Corsette, Douglas F. Spray fitment for squeeze bottles. 3,794,247, Cl. 239-327.000.

Cosentino, Louis Ciro; and Bove, Peter Richard. Light coupling data transfer system. 3,794,841, Cl. 250-199.000.

Cotabish, Harry N.; Wise, Layton A.; and Buban, Elmer E., to Mine Safety Appliances Company. Emergency breathing apparatus. 3,794,030, Cl. 128-202.000.

Coupin, Claude; and Deval, Alain, to Societe d'Applications Generales d'Electricite et de Mecanique. Electric motors with electronic commutation. 3,794,895, Cl. 318-254.000.

Courtesy Communications Corporation: *See—*
Kemmerly, Richard C.; Kaner, Gary M.; and Merritt, Gary C., 3,794,774.

Cox, Donald Clyde; and Reudink, Otto John, to Bell Telephone Laboratories, Incorporated. Delay equalizing circuit for an audio system using multiple microphones. 3,794,766, Cl. 179-1.00p.

Cracolice, William N. Expansion trailer hitch. 3,794,355, Cl. 280-482.000.

Cragoe, Edward J., Jr.; and Schultz, Everett M., to Merck & Co., Inc. Methods of treating edema and hypertension using certain 2-aminoethylphenols. 3,794,734, Cl. 424-330.000.

Crawford, James Edwin: *See—*
Chadha, Rajendra Nath; Crawford, James Edwin; and Getson, John Charles, 3,794,694.

Creefkes, Johannes Anton: *See—*
Boudewijns, Henricus Petrus Johannes; and Creefkes, Johannes Anton, 3,794,763.

Crescentini, Lamberto: *See—*
Wells, Rodney Lee; and Crescentini, Lamberto, 3,794,631.

Creusot-Loire: *See—*
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Cropper, Wendell P.; Kapff, Staxt Frederick; and Jacobs, Robert B., to Standard Oil Company. Phase interface indicator. 3,794,913, Cl. 324-65.00p.

Crouzet: *See—*
Jullien-Davin, Jean, 3,794,286.

Crown Zellerbach Corporation: *See—*
Back, Sangho, E., 3,794,558.

Cryomagnetics Corporation: *See—*
Raymond, Jan W.; and Wetstone, Clay N., 3,794,100.

Cudmore, Patrick. Velocipede. 3,794,351, Cl. 280-204.000.

Cufrini, Franco, to Allitalia Import-Export Inc. Wheel alignment measuring apparatus. 3,793,736, Cl. 33-203.170.

Cunningham, James A.: *See—*
Warefield, Robert H.; and Cunningham, James A., 3,793,721.

Curran, Donald R.: *See—*
Shockey, Donald A.; and Curran, Donald R., 3,793,874.

Curtis, Anthony Thomas: *See—*
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Curtis, Richard A.: *See—*
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Curtiss-Wright Corporation: *See—*
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Custer, Harry S.: *See—*
Oliver, Brian H.; and Custer, Harry S., 3,794,577.

Custom Resins, Inc., mesne: *See—*
Anderson, Raymond P.; and Hill, Robert W., 3,794,625.
Anderson, Raymond Paul, 3,794,624.

Cwycyshyn, Walter; Buccellato, Anthony; and Hoffman, Henry C., to General Motors Corporation. Device for securing vehicle to transporter. 3,794,350, Cl. 280-179.00r.

Czelusniak, Paul Anthony, Jr., to Fieldcrest Mills, Inc. Selvage forming apparatus for looms. 3,794,083, Cl. 139-54.000.

Czernik, Daniel E.; and McDowell, Donald J., to Felt Products Mfg., Co. Gasket. 3,794,333, Cl. 277-180.000.

Daimler-Benz Aktiengesellschaft: *See—*
Hardenberg, Horst; and Frankle, Gerhard, 3,794,007.

Dainippon Ink and Chemicals Incorporated: *See—*
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Dal Pont, Jean-Pierre: *See—*
Lackme, Claude; Digonnet, Albert; Colas, Louis; Boctin, Jean; Dal Pont, Jean-Pierre; and Papillon, Bernard, 3,794,582.

D'Amico, Frank J.; and Stein, William H., Jr., to Hill-Rom Company, Inc. Cabinet. 3,794,395, Cl. 312-209.000.

Daniels, George A.; and Wingate, James A., to Ethyl Corporation. Separation of methanol and methylene bromide by extractive distillation with ethylene bromide. 3,794,568, Cl. 203-67.000.

Daniels, Peter J.: *See—*
Wohl, Arnold J.; Daniels, Peter J.; and Topliss, John G., 3,794,729.

Dann, Bert H., to Bell & Howell Company. Signal correcting apparatus. 3,794,940, Cl. 333-77.000.

Dannert, Robert D.; and Manwaring, Michael E., to General Mills, Inc. Protein fiber fabrication process. 3,794,731, Cl. 426-276.000.

Darboven, Ernest F.; and Solomon, Leon R., to Singer Company, The. Time-shared frequency tracking loop. 3,794,771, Cl. 179-15.0bl.

Darrow, John O. G., to Westinghouse Air Brake Company. Fail-safe code keying transmitter. 3,794,920, Cl. 325-105.000.

Das, Gregory Prem, 20% to Lee, Raymond, Organization, Inc., The. Automotive engine exhaust purifier. 3,793,807, Cl. 55-73.000.

Data-Plex Systems, Inc.: *See—*
Dudley, Don J., 3,794,758.

Daum, Werner; Scheinpflug, Hans; Frohberger, Paul-Ernst; and Grewe, Ferdinand, to Bayer Aktiengesellschaft. N-(ω-cyano-alkyl)-carbamyl-benzimidazoles used as fungicides and anti-bacterial agents. 3,794,728, Cl. 424-273.000.

Dautzenberg, Frits M.; and Kouwenwoven, Herman W., to Shell Oil Company. Method of preparing a catalyst of a Group VIII noble metal and tin. 3,794,599, Cl. 252-466.0pt.

Davidoff, Benjamin: *See—*
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Davidson, Thomas W.: *See—*
Lay, Clark M.; Burkhardt, James H., Jr.; and Davidson, Thomas W., 3,794,814.

Davies, Ivor Llewellyn; and Burrow, Reginald Edwin, to Taylor Woodrow Construction Limited. Pressure vessels. 3,794,559, Cl. 176-87.000.

Davis, Dennis J.; and Juhasz, John E., to Bendix Corporation, The. Adaptive braking system. 3,794,389, Cl. 303-21.00p.

Davis, Henry E., to Mobile Drilling Company, Inc. Hollow auger-driver coupling. 3,794,127, Cl. 175-58.000.

Dawes, Dag: *See—*
Boehner, Beat; and Dawes, Dag, 3,794,661.

DBM Industries Limited: *See—*
Perrella, Guido, 3,793,779.

De Coene, Frans Jozef; and Hill, Edward Williman Rowland, to Sperry Rand Corporation. Crop feeding means for an axial flow combine having side by side threshing units. 3,794,047, Cl. 130-27.00t.

De Favere, Gianfrance, to Grob & Co. Aktiengesellschaft. Rail bearing for a warp stop motion. 3,794,084, Cl. 139-369.000.

De Laval Turbine California, Inc.: *See—*
Mathews, Clinton S., 3,794,008.

De Line, John W.: *See—*
De Line, John W.; and Ida, Nobel N. (said Nobel, Ida N., assor. to said), 3,794,206.

De Line, John W.; and Ida, Nobel N., said Nobel, Ida N., assor. to said De Line, John W. Frangible opening means for a container lid. 3,794,206, Cl. 220-27.000.

De Nio, Emanuel H., to Woolsey Marine Industries, Inc. Marine antifouling paints. 3,794,501, Cl. 106-15.0af.

De Souza, Thomas E.: *See—*
Bhatia, Staya P.; Prahacs, Steven; De Souza, Thomas E.; and Jones, Herbert G., 3,794,711.

Dean, Carl J.; and Wright, David M., to Wright, Barry, Corporation. Door guide. 3,794,401, Cl. 312-323.000.

Deckard, Emmett S., 20% to Lee, Raymond, Organization, Inc., The. Concealed pistol mounting. 3,793,759, Cl. 42-1.00k.

Decker, Arthur L.: *See—*
Vennard, William O.; and Decker, Arthur L., 3,794,044.

Deerfield, Alan J.; and Nissen, Stanley M., to Raytheon Company. Array processor for digital computers. 3,794,984, Cl. 340-112.500.

Degenkolb, Robert Stephen; Allington, Trevor Richard; Wang, Yin Huai; and Oakes, Martin, to RCA Corporation. Method of controlling resistance values of thick-film resistors. 3,793,717, Cl. 29-610.000.

Dehne, Axel G., to Hughes Aircraft Company. Decontamination method and apparatus for cryogenic refrigerators. 3,793,846, Cl. 62-6.000.

DeKlotz, Robert J.; and Holmes, Kendall B. Portable catheter unit. 3,794,042, Cl. 128-349.00r.

Delavan Manufacturing Company: *See—*
Wayne, Alex, 3,793,690.

Delerue, Dominique Michel. Support arrangement for a hank of thread, and hanks equipped with said support. 3,794,263, Cl. 242-127.000.

Delmastro, Joseph R.: *See—*
Booman, Glenn L.; and Delmastro, Joseph R., 3,794,174.

Demag Aktiengesellschaft: *See—*
Voss, Wilhelm, 3,794,105.

Denker, James M., to Nutron Corporation. Valving. 3,794,065, Cl. 137-117.000.

Denki Onkyo Co., Ltd.: *See—*
Masuda, Noboru, 3,794,864.

Denley, Ronald S., to Teletype Corporation. Signal responsive belt printer. 3,793,951, Cl. 101-111.000.

Dorman, Dennis, to Austin Hoy and Company Limited. Storage silos and bottom unloaders therefor. 3,794,188, Cl. 214-17.0da.

Dennis, Kent S.; and Alexander, Willard E., to Dow Chemical Company, The. Heat stabilized compositions. 3,794,616, Cl. 260-45.70p.

Dennison Manufacturing Company: *See—*
Sheffield, Wilbur L., 3,793,946.

Derevyagina, Irina Sergeevna: *See—*
Tarasenko, Leonid Grigorievich; Kuperman, Abram Yakovlevich; Noskov, Felix Pavlovich; Derevyagina, Irina Sergeevna; Malkus, Boris Lvovich; Bernshtein, Naum Davydovich; Alexeev, Anatoly Anatolievich; and Vishnyakov, Anatoly Nikolaevich, 3,794,254.

Derouineau, Rene. Supporting cuff for transfusions or perfusions. 3,794,032, Cl. 128-214.00r.

Desalination Systems, Inc.: *See—*
Bray, Donald T., 3,794,172.
Bray, Donald T., 3,794,173.

Deschenes, Pierre A.: *See—*
Villeret, Michel; Stephenne, Hubert; and Deschenes, Pierre A., 3,794,919.

Deutsch, Ralph, to North American Rockwell Corporation. Apparatus and method for frequency modulation for sampled amplitude signal generating system. 3,794,748, Cl. 84-1.240.

Deutsche Texaco Aktiengesellschaft: *See—*
Vietz, Helmut, 3,794,015.

Deval, Alain: *See—*
Coupin, Claude; and Deval, Alain, 3,794,895.

Dewey, William E.: *See—*
Colwill, Richard H.; Dewey, William E.; Vanbennekom, Hans Lochmann; and Mowry, William H., Jr., 3,794,228.

Dexter, Everett H.: *See—*
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Dezaki, Yoshito, to Matsushita Electric Industrial Co., Ltd. Remote control of a receiver. 3,794,985, Cl. 340-171.00r.

Dhein, Rolf: *See—*
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Di Ianni, Daniel: *See—*
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Diamond, Julius; Douglas, George H.; and Burns, Bernard J., to Rorer, William H., Inc. 1-Substituted biguanides. 3,794,685, Cl. 260-565.000.

Diaz, Juan C.; and Mears, Robert A., to Eastman Kodak Company. Polyethylene containing extrusion coating compositions. 3,794,698, Cl. 260-897.00r.

Dickason, Richard T.: *See—*
Beck, Jerry G.; Dickason, Richard T.; and Ray, Donald J., 3,794,809.

Dickey-John Corporation: *See—*
Fathauer, George H., 3,794,911.

Dickhart, Irwin C.; and Fenton, James E., to Ford Motor Company. Time delay gas turbine starting system with fuel presence and flame sensing circuitry. 3,793,825, Cl. 60-39.140.

Diedrich, Donald F.; and Price, John H., to Hudson Oxygen Therapy Sales Company. Oxygen diluter device. 3,794,072, Cl. 137-604.000.

Diehl, Francis L., to Proctor & Gamble Company, The. Built detergent composition containing whiteness maintenance additive. 3,794,605, Cl. 252-89.000.

Diener, Rudolf, to Autoelektronik AG. Floatless carburetor for internal combustion engines. 3,794,302, Cl. 261-36.00a.

Dietrich, Henri; and Lehmann, Claude, to Ciba-Geigy Corporation. P-(acetoaceta midoalkyl)benzenesulfonamide derivatives as hypoglycermicagents. 3,794,737, Cl. 424-273.000.

Dietze, Wolfgang: *See—*
Kasper, Andreas; and Dietze, Wolfgang, 3,793,984.

Dietzel, Walter; and Matusch, Siegfried, to Braunschweigische Maschinenbauanstalt. Diffusion tower. 3,794,521, Cl. 127-5.000.

Digonnet, Albert: *See—*
Lackme, Claude; Digonnet, Albert; Colas, Louis; Boctin, Jean; Dal Pont, Jean-Pierre; and Papillon, Bernard, 3,794,582.

Dillard, Robert D.; and Pavey, Donald E., to Lilly, Eli, and Company. Diethynylbenzyl alcohols as herbicides. 3,794,480, Cl. 71-122.000.

Dillard, Robert D., to Lilly, Eli, and Company. Novel diethynylcarbinols and ethers. 3,794,689, Cl. 260-618.00e.

Dimmock, John O.; Melngailis, Ivars; and Strauss, Alan J., to Massachusetts Institute of Technology. Method and means of construction of a semiconductor material for use in a laser. 3,794,844, Cl. 250-370.000.

Directia de Telecomunicatii a Municipiu Bucyresti: *See—*
Radu, Stan G., 3,794,783.

Dirksen, Alvin J., to Kalium Chemicals Limited. Fertilizer composition containing micronutrients. 3,794,478, Cl. 71-1.000.

Diver, John R.: *See—*
Converse, John O.; Korpi, Kenneth W.; and Diver, John R., 3,794,166.

Dixon, Rolland E.; and Randall, John H., to Phillips Petroleum Company. Method for recycle of alkylation catalysts. 3,794,691, Cl. 260-683.430.

Dobbins, Mark. Multiple service decking unit. 3,793,793, Cl. 52-221.000.

Dohlen, Klaus V.; and Lukas, Josef, to Patent-Freuhand-Gesellschaft fur elektrische Gluhlampen mbH. Method for seizing, and holding for transfer of small objects, particularly coiled filaments for electrical lamps and the like. 3,79 ,706, Cl. 29-559.000.

Dolder, Guido; and Schmalzi, Alfred, to Escher Wyss Limited. Butterfly valve. 3,794,288, Cl. 251-62.000.

Donlon, Richard H.: *See—*
Mooney, John J.; Marshman, Frank E.; and Donlon, Richard H., 3,793,963.

Dorey, Howard Anthony, to Solartron Electronic Group Limited, The. Electrically controlled switching circuits. 3,794,930, Cl. 330-10.000.

Dorn, Joseph A.: *See—*
Wagner, Louis E.; McCord, Andrew T.; and Dorn, Joseph A., 3,794,299.

Dorre, Erhard; and Nussbaum, Manfred, to Feldmuhle Anlagen- und Produktionsgesellschaft mit Duesseldorf. Bullet-resisting armor. 3,793,648, Cl. 2-2.500.

Doucet, Charles. Filtration of fluids. 3,794,179, Cl. 210-409.000.

Douglas, George H.: *See—*
Diamond, Julius; Douglas, George H.; and Burns, Bernard J., 3,794,685.

Dow Badische Company: *See—*
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Dow Chemical Company, The: *See—*
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Drasner, Joseph, 3,794,613.
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O'Melia, Frances C., 3,794,724.
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Dow Corning Corporation: *See—*
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Kim, Yung K., 3,794,672.
Plueddemann, Edwin P., 3,794,612.
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Dowis, James W. Lazy Susan assembly. 3,794,952, Cl. 339-5.00p.

Downey, Holmes A. Shaft coupling and element therefor. 3,793,849, Cl. 64-13.000.

Doxsee Feed Corporation: *See—*
Finley, Ronald K.; Langlois, Donald J.; Nicholson, Robert H.; and Porter, Herschel F., 3,794,746.

Doyle, Donald A., to Robertshaw Controls Company. Vebration actuated switch with magnetic holding means and armature reset positioning means. 3,794,786, Cl. 200-61.45r.

Dozsa, Otto L., to United States Gypsum Company. Method of making and using soil stabilizer. 3,793,841, Cl. 61-36.00r.

Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; and Blempel, Manfred, to Bayer Aktiengesellschaft. Substituted N-benzylimidazoles. 3,794,653, Cl. 260-296.00r.

Drasner, Joseph, to Dow Chemical Company, The. Chlorinated polyethylene-organic polyisocyanate adhesive for laminating chlorinated polyolefin film or sheet materials to fabric. 3,794,613, Cl. 260-33.6ua.

Drozak, David A. Soil aerator. 3,794,121, Cl. 172-21.000.

Du Pont de Nemours, E. I., and Company: *See—*
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Dubreuil, Real Roger. Recessible electric floor or the like outlet assembly. 3,794,956, Cl. 339-34.000.

Duczek, Ewald: *See—*
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Dudley, Don J., to Data-Plex Systems, Inc. Selectable display system. 3,794,758, Cl. 178-6.800.

Duer, Morris J.; and Weidman, William A., to General Motors Corporation. Rotary valve with sealing structure. 3,794,297, Cl. 251-309.000.

Dufer, William B.: *See—*
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Duff, Raymond A. Reinforced concrete boat hull. 3,793,975, Cl. 114-65.00a.

Dulle, Bernard A., to Procter & Gamble Company, The. Compliant conformable tampon. 3,794,029, Cl. 128-285.000.

Dumitrescu, Constantin: *See—*
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Dvonch, William; and Alburn, Harvey E., to American Home Products Corporation. (1,4-Cyclohexadien-1-yl) acetic acids. 3,794,678, Cl. 260-514.001.

Dwan, Arthur Stanley. Alcohol security interlock switch device. 3,794,796, Cl. 200-44.000.

Dykan, Vitaly Grigorievich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July

Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,794,104.

Dykmans, Maximiliaan J. Means and techniques useful in wire gripping devices. 3,794,233, Cl. 226-183.000.

Dynamit Nobel Aktiengesellschaft: *See—*
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Ebert, John S.: *See—*
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Eddy, William R.; Richards, Frank P.; and Thompson, James K., to Phillips Petroleum Company. Method and apparatus for continuously forming contoured metal strips. 3,793,862, Cl. 72-4.000.

Edgar, Lawrence E. Thread re-forming tool. 3,793,659, Cl. 10-1.00b.

Edmunds, Edward, Jr.: *See—*
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Egli, Alwin, to Schweizerische Industrie-Gesellschaft. Reclosable rectangular cardboard box. 3,794,238, Cl. 229-44.0cb.

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Eickmann, Karl. Fluid-traversed flow piston unit. 3,793,924, Cl. 91-487.000.

Eimers, Erich; Margotte, Dieter; Dhein, Rolf; and Schmid, Helmut, to Bayer Aktiengesellschaft. Stabilized aromatic polycarbonates. 3,794,629, Cl. 260-45.80a.

Eisen, Josef: *See—*
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Eisentraut, Kent J.; Tischer, Robert L.; and Sievers, Robert E. Rare earth beta-ketoenolate anti-knock additives in gasolines. 3,794,473, Cl. 44-63.000.

Eknes, Oscar. Aircraft structure to reduce sonic boom intensity. 3,794,274, Cl. 244-130.000.

Ekstedt, Edward E., to General Electric Company. Stiffener for combustor liner. 3,793,827, Cl. 60-39.650.

Elb-Schliff: *See—*
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Ellis, Leonard C.; and Kise, Mearl A., to Virginia Chemicals Inc. Sodium dithionite stabilization against self-ignition. 3,794,738, Cl. 423-515.000.

Ellis, Lynn W., to International Telephone and Telegraph Corporation. Head end interconnection system for cable TV systems. 3,794,923, Cl. 325-308.000.

Elscint Ltd.: *See—*
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Emery Industries, Inc.: *See—*
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Emond, Albert. Bag making machine. 3,793,927, Cl. 93-33.00h.

Emori, Takashi: *See—*
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Engalitcheff, John, Jr., to Baltimore Aircoil Company, Inc., mesne. Injector type cooling tower. 3,794,306, Cl. 261-116.000.

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Engdahl, Paul D.; and Russell, A. Wallace, said Russell assor. to said Engdahl, Paul D. Seismic shock recorder and annunciator system. 3,795,006, Cl. 346-7.000.

Engelbart, Wilhelm, to Hoffman Rheem Maschinen GmbH. Hand operated steaming and ironing device. 3,793,753, Cl. 38-77.600.

Engeler, William E.; and Cordes, Linus F. Method for making high temperature low ohmic contact to silicon. 3,794,516, Cl. 117-217.000.

English Numbering Machines Limited: *See—*
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Enomoto, Satoru; and Takahashi, Masaaki, to Kureha Kogaku Kogko Kabushiki Kaisha. Process for treating by-product oils produced in the production of olefins. 3,794,579, Cl. 208-40.000.

Entner, Ronald S. Programmable electromagnetic logic. 3,794,988, Cl. 340-174.0tf.

Envirotech Corporation: *See—*
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Eppler, John, Machine Works, Inc.: *See—*
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Ersek, Robert A.; Wall, Donald E.; and Garity, Michael C., to Med General, Inc. Sterile sheath for surgical illuminator. 3,794,091, Cl. 150-52.00r.

Escher Wyss Limited: *See—*
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Eskeli, Michael. Gas compressor. 3,793,848, Cl. 62-402.000.

Espenschied, Helmut; Rothfuss, Georg; and Sauer, Joseph, to Bosch, Robert, G.m.b.H. Gear shifting assembly for change-speed transmissions. 3,793,898, Cl. 74-335.000.

Esso Production Research Company: *See—*
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Esteban, Daniel Jacques, to International Business Machines Corporation. Digital filters with impulse response modified by data circulations occurring between successive data inputs. 3,794,816, Cl. 235-152.000.

Estelle, Weems E.: *See—*
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Evani, Syamalarao; Lalk, Robert H.; and Fiero, Terry H., to Dow Chemical Company, The. Aqueous coating compositions thickened by a terpolyner of a alkenyl aromatic compound, an unsaturated dicarboxylic acid, and an ether of vinyl benzyl alcohol and an oxyakylated compound. 3,794,608, Cl. 260-29.6rw.

Evans, Delme, to Lilly Industries Limited. N-heteroarlidene erythromycyclamines. 3,794,635, Cl. 260-210.00e.

Everingham, Leslie, 1/2 to Papp, Alexander. Coupling for caravans and trailers. 3,794,354, Cl. 280-478.00r.

Ewert, Bruno; and Roos, Wilfried, to General Motors Corporation. Motor vehicle seat belt occupant-restraint system. 3,794,135, Cl. 180-82.000.

F & W Products, Inc.: *See—*
Casstevens, Floyd C., Jr.; and Henry, Truett C., 3,793,681.

Fairfield, Jan Dawidowicz; and Ferraro, Frank A., to Warner-Lambert Company. Adjustable safety razor. 3,793,725, Cl. 30-63.000.

Fanshier, Chester. Excess flow check valve. 3,794,077, Cl. 137-513.300.

Farabaugh, Aloysius W.; and Gulotta, Joseph A., to PPG Industries, Inc. Glass sheet float apparatus with heat flux edge detector. 3,794,477, Cl. 65-158.000.

Farah Manufacturing Company, Inc.: *See—*
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Fathauer, George H., to Dickey-John Corporation. Weight responsive moisture tester having time delay means and temperature compensation. 3,794,911, Cl. 324-61.0qs.

Fauth, Donald A.; and Lindberg, Ramon T., to United States of America, Interior, mesne. Device for cathodically protecting metal conduit system. 3,794,574, Cl. 204-197.000.

Feasey, Raymond D., to Eastman Kodak Company. Method and apparatus for continously supplying fluid pressure to a plurality of fluid directing members. 3,794,151, Cl. 198-19.000.

Federal Pacific Electric Company: *See—*
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Ferrentino, Antonio, to Industrie Pirelli Societe per Azioni. Waveguide winding machine. 3,793,864, Cl. 72-136.000.

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Ferrox Iron Ltd.: *See—*
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Finley, Ronald K.; Langlois, Donald J.; Nicholson, Robert H.; and Porter, Herschel F., to Doxsee Feed Corporation. Method for obtaining clean meat of natural color from whole clams. 3,794,746, Cl. 426-479.000.

Finnegan, Francis, to Texas Instruments, Incorporated. Apparatus for obviating undesirable operation of all electric circuit due to faulty switch. 3,794,859, Cl. 307-238.000.

Fischer, Eduard F.; Farnworth, Edwin; and Christensen, Elmer, to Black Clawson Company, The. Apparatus for storing a fluent material. 3,794,387, Cl. 302-10.000.

Fischer, Hans Karl Wilhelm, to General Motors Corporation. Automotive vehicle frames. 3,794,348, Cl. 280-106.000.

Fischer, Laurence A. Intruder alarm for automobiles. 3,794,967, Cl. 340-63.000.

Fiser, James T.; Jackman, Robert M.; and James, Ray R., to Smith-Inland, A.O., Inc. Fiber reinforced tublar article having abrasion resistant liner. 3,794,081, Cl. 138-141.000.

Fiser, James T., to Smith, A. O., Inland, Inc. Abrasion resistant pipe fitting. 3,794,359, Cl. 285-55.000.

Fishel, Kenneth R., to United States of America, Navy. Combination strength/hydraulic cable. 3,794,079, Cl. 138-103.000.

Fishman, Adolph. Chemical compositions for general cleaning. 3,794,589, Cl. 252-110.000.

Fitch, Clifford E., Sr.: *See—*
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Fleenor, Warren O. Cargo handling mechanism. 3,794,193, Cl. 214-75.00g.

Fleischer, Allan A.; Hendry, George O.; and Wells, Dale K., to United States of America, Atomic Energy Commission, mesne. System for producing high energy positively charged particles. 3,794,927, Cl. 323-233.000.

Flider, Frank S., to Justrite Manufacturing Company, The. Plastic safety container for inflammables. 3,794,235, Cl. 222-471.000.

Fling, Thomas A.; and Fling, William F. Liquid level measuring device. 3,793,884, Cl. 73-315.000.

Fling, William F.: *See—*
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Flor, Lawrence A.; and Hoyne, Earl K., to Minnesota Mining and Manufacturing Company. Duplicating machine to convert microfilm to microfiche. 3,794,419, Cl. 355-91.000.

Flototto, Fritz. Vertically adjustable school desk with an inclined top. 3,794,397, Cl. 312-231.000.

Flower, Thomas A.; and Rothmayer, Noel York. Rotary filament cutter. 3,793,917, Cl. 83-199.000.

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Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See—*
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Fowler, Joe W. Lighting display with complex image motion. 3,794,823, Cl. 240-10.100.

Fowler, William H., to Western Electric Company, Incorporated. Testing and increasing breakdown voltage of crossovers. 3,793,879, Cl. 73-95.000.

Foxboro Company, The: *See—*
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France, Jimmie J.; Neubert, Fred J.; Caldwell, Eugene L.; Springer, Howard D.; and Sutton, Max E., to Westinghouse Air Brake Company. Tilting dump truck mud flap assembly. 3,794,383, Cl. 298-1.0sg.

Franke, Raymond C.: *See—*
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Frankeny, Richard F.; and Johnson, Sidney D., to International Business Machines Corporation. Apparatus and method for monitoring the operation of tested units. 3,794,831, Cl. 340-172.500.

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Freeby, Leroy W., to Robertshaw Controls Company. Clutch spring. 3,794,312, Cl. 217-156.000.

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Freenor, Francis J., III, to Chevron Research Company. N-(s,s-dialkyldithiophospho) ureas. 3,794,699, Cl. 260-938.000.

Frei, Ephraim H.; and Yerushalmi, Shmuel, to Yeda Research and Development Co. Ltd. Gastrointestinal catheter. 3,794,041, Cl. 128-348.000.

Frey, Sydney W., Jr.; and Gaa, Donald L., to Bourns, Inc. Instrument supporting device. 3,794,278, Cl. 248-27.000.

Frick, Roger L., to Rosemount Inc. Diaphragm construction for differential pressure transducer. 3,793,885, Cl. 73-398.00c.

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Froumajou, Armand, to Automobile Peugeot and Regie Nationale des Usines Renault. Transmission assembly in particular for a vehicle. 3,793,897, Cl. 74-199.000.

Froumajou, Armand; and Chillon, Claude, to Automobiles Peugeot and Regie Nationale des Usines Renault. Automobile vehicle. 3,794,342, Cl. 280-106.50r.

Frye, Howard S. Hitch device. 3,794,357, Cl. 280-515.000.

Fuchs, Francis Joseph, Jr.; and Venkatesan, Peruvemba Swaminatha, to Western Electric Company, Incorporated. Extrusion die and method for making the same. 3,793,911, Cl. 76-107.00r.

Fuchs, Otto, Meinerzhagen, Firma: *See—*
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Fucito, Dermot Thomas, to Stromberg-Carlson Corporation. Converter circuit. 3,794,907, Cl. 321-16.000.

Fuji Photo Film Co., Ltd.: *See—*
Akashi, Goro; Fujiyama, Masaaki; Kasuga, Akira; Yamada, Yasuyuki; Suzuki, Osamu; Nakamura, Matsuaki; Sega, Kenji; and Kato, Kiroshi, 3,794,519.
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Fuji Spinning Co., Ltd.: *See—*
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Fujii, Motoharu; Yamaguchi, Isao; and Miyamoto, Kimio. Fluorescent lighting apparatus. 3,794,882, Cl. 315-100.000.

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Fujitsu Limited: *See—*
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Fukuda, Akira. Air leakage detector, using a direct pressure system. 3,793,877, Cl. 73-49.300.

Fukuda, Makoto: *See—*
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Fukuma, Nobuo: *See—*
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Fuller, Frederick S., to General Motors Corporation. Occupant restraint system. 3,794,349, Cl. 280-150.0ab.

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Furey, Dillon Charles, to Furey, Charles, and Associates Proprietary, Limited. Child's bassinet, seat, bed or carrier. 3,794,379, Cl. 297-250.000.

Furno, Harold R. Extensible frame. 3,794,283, Cl. 248-276.000.

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Gacs, Peter T.; and Williams, Lucien C., to Foremark Corporation. Aircraft loading bridge. 3,793,662, Cl. 14-71.000.

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Yao, Shi-Kuang, 3,794,498.

Gagen, Paul Francis; and Jones, Charles Elmer, Jr., to Bell Telephone Laboratories, Incorporated. Subterranean penetrator steering system utilizing fixed and rotatable fins. 3,794,128, Cl. 175-73.000.

Gagnon, Harvey J., Sr. Toy machine for building dams and like purposes. 3,793,764, Cl. 46-40.000.

Gale, Michael R.: *See—*
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Galer, Herbert W., to United States Steel Corporation. Securely closed containers. 3,794,201, Cl. 215-9.000.

Gallanis, George P.; and Komatsu, Ikuo I., to Sunbeam Corporation. Power drive hair combing appliance. 3,794,050, Cl. 132-11.00a.

Ganiaris, Neophytos, to Struthers Scientific and International Corporation. Fluidized bed process. 3,793,740, Cl. 34-10.000.

Ganiaris, Neophytos. Fluidized bed process for drying ammonium sulphate. 3,794,099, Cl. 159-48.00r.

Garbalizer Corporation of America: *See—*
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Gardner, David Stanley John, to White Tomkins Limited. Purification of hop extracts. 3,794,744, Cl. 426-424.000.

Garity, Michael C.: *See—*
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Garrity, Paul G.: *See—*
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Garshick, Alfred, to Boston Insulated Wire & Cable Co. Shielded cable. 3,794,750, Cl. 174-36.000.

Gash, Virgil W.; and Bissing, Donald E., to Monsanto Company. Preparation of monohaloacetyl halides. 3,794,679, Cl. 260-544.00y.

Gassner, Gustav; Horlein, Gerhard; and Rochling, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Halocarboxylic acid anilides. 3,794,683, Cl. 260-562.00b.

Gaynor, Joseph, to Bell & Howell Company. Information recording methods, apparatus and media. 3,795,009, Cl. 346-74.00m.

Gazuit, Georges. Tire curing press tire bead positioning device. 3,794,457, Cl. 425-28.00r.

Gebhard, Harold C., to Ford Motor Company. Windshield cleaner assembly. 3,793,671, Cl. 15-250.010.

Gebr. Boehler & Co. AG: *See—*
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Gebruder Boehringer Gesellschaft mit beschrankter Haftung: *See—*
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Gee, Gordon E., to Electro Corporation. Regenerative transistorized switch with constant voltage circuit. 3,794,855, Cl. 307-290.000.

Gehman, John B., to General Dynamics Corporation. Radio frequency intrusion detection system. 3,794,992, Cl. 343-5.0pd.

Gellekink, Bernard, to N.V. Hollandse Signaalapparaten. Noise-figure measuring circuit. 3,794,999, Cl. 343-17.700.

Genchi, Hiroshi; and Yonlyama, Tsuneo, to Tokyo Shibaur-Electrek Co., Ltd. Pattern processing apparatus. 3,794,761, Cl. 178-7.200.

Gendreu, Robert; and Platel, Serge, to Thomson-CSF. Device for imparting an alternating rotary motion to a body, about a mechanical axis. 3,794,901, Cl. 318-627.000.

General Aviation Electronics, Inc.: *See—*
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Gertsch AG, mesne: *See—*
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Giachetto, John H., to National Petro-Chemicals Corporation, mesne. Process for the production of ethylene/butene-1 copolymers and ethylene homopolymers. 3,794,627, Cl. 260-88.20r.

Gibert, Guy; and Vidal, Pierre, to Compagnie d'Electronique et de Piezo-Electricite C.E.P.E. Fixing device for an oscillatory crystal. 3,794,867, Cl. 310-9.100.

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Gilman, Clarence R., to United States of America, Interior. Photomechanical apparatus for manipulating image form. 3,794,420, Cl. 355-78.000.

Ginaven, Marvin E., to Beuer Bros. Co., The. Hopper type separating and classifying device. 3,794,164, Cl. 209-243.000.

Girard, Peter F., to Teledyne Ryan Aeronauticals. Viol rotor wing drone aircraft. 3,794,273, Cl. 244-7.00a.

Girgis, Mikhail M., to Uniroyal Ltd. Process for preparation of thiazole hydrohalides. 3,794,636, Cl. 260-247.100.

Girling Limited: *See—*
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Glover, Douglas Wade, to AMP Incorporated. High voltage connector. 3,794,958, Cl. 339-94.00r.

Goadby, Walter: *See—*
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Godwin, Gilbert A.; and Aiguesvives, Armando A., to Richardson, Howe, Scale Company. Totalizer for weighing systems. 3,794,815, Cl. 235-92.0wt.

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Goings, Iden Dean. Method of repairing cavitation damage on a hydraulic turbine. 3,793,698, Cl. 29-401.000.

Golde, H. T., GmbH, Firma: *See—*
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Goldfarb, Arthur M.; Litterio, James; and Roth, John H., to Rohm & Haas Company. Yarn entanglement tester. 3,793,883, Cl. 73-160.000.

Goldman, Wayne E. Fluid cooled semiconductor socket. 3,794,886, Cl. 317-100.000.

Goldstein, Irving: *See—*
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Goldstein, Lynn; and Bounds, Joe W., to Texel Industries, Inc. Combined bowling pin wiping mechanism, conveyor and pick-up mechanism. 3,794,321, Cl. 273-54.00r.

Gonzalez, Oscar Pedro: *See—*
Spano, Eduardo Victor; Sueiro, Otilia; Gonzalez, Oscar Pedro; and Campiani, Noem Mabel, 3,794,087.

Goodman, William R.; and Howard, Kal W., to Stromberg-Carlson Corporation. Key telephone system transfer adapter circuit. 3,794,776, Cl. 179-99.000.

Goodwater, Harry C., to Audio Aleet Corporation. Zone speaker relay system. 3,794,765, Cl. 179-1.0sw.

Goodyear Tire & Rubber Company, The: *See—*
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Gordon, Earl B. Golf club head. 3,794,328, Cl. 273-167.00e.

Gordos, Ambrose L. Retractable spike golf shoe. 3,793,751, Cl. 36-61.000.

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Gottlieb, Milton; and Conroy, John J., to Westinghouse Electric Corporation. Folded path acoustic delay line and optical processor. 3,794,937, Cl. 333-30.00r.

Gould Inc.: *See—*
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Grable, Donovan B. Well pumping control. 3,793,904, Cl. 74-590.000.

Grace, W. R., & Co.: *See—*
Howe, Milton A., Jr.; Dexter, Everett H.; and Thompson, Eugene D., 3,793,799.
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Graham, Percy R. Magnetic latch and lock. 3,794,366, Cl. 292-251.500.

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Grantham, Max Edward, to Tecalemit (Engineering) Limited. Drive arrangement. 3,793,902, Cl. 74-50.000.

Gravereaux, Daniel W.: *See—*
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Gray, Ronald G., to Ford Motor Company. Motor vehicle rear viewing system. 3,794,411, Cl. 350-302.000.

Grebennikov, Vladimir Vissarionovich: *See—*
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Greenhut, Joseph. Rotary centrifugal speed-responsive control device. 3,793,891, Cl. 73-538.000.

Greenwald, Richard B.: *See—*

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Greuzerd, Charles F.; and Henkin, Louis Lawrence, 10% to Morgan, Victor B., 5% each to Mahoney, Thomas P. and Schick, George E. Headphones for reproducing four-channel sound. 3,794,779, Cl. 179-156.00r.
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Grosbard, Gregory. Magnetic rotor assembly. 3,794,391, Cl. 308-10.000.
Gross, Thomas A. O. Dynamic braking of electric motors with thermistor braking circuit. 3,794,898, Cl. 318-380.000.
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Guth, Lauren W., to General Electric. Rack mechanism for toploading dishwasher. 3,794,400, Cl. 312-269.000.
Guthart, Leo A., to Alarm Device Manufacturing Company; a division of Pittway Corporation. Alarm system with timed exit circuit means. 3,794,991, Cl. 340-409.000.
Guttinger, Kurt, to Saia A. G. Fabriki elektrischer Apparate. Device for producing a rotating movement by means of at least one pulsating driving force. 3,794,865, Cl. 310-82.000.
H & D E Limited: *See—*
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Haas, David J.; and Pichert, Jerome. Moving target spring loaded X-ray tube. 3,794,872, Cl. 313-60.000.
Haas, Franz. Apparatus for producing tubular waffle shapes. 3,793,938, Cl. 99-450.600.
Haase, Dietrich E. Radial blower. 3,794,439, Cl. 415-54.000.
Haferl, Peter Eduard, to RCA Corporation. Pal-type color signal processing apparatus. 3,794,754, Cl. 178-5.40p.
Hagdorn, Manfred Otto; Palmeth, Torsten Birger; and Ragnar, Jean Ivan, to Aktiebolaget Electrolux. Trailer heating system. 3,794,242, Cl. 237-59.000.
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Hagenbach, Robert J., to Xerox Corporation. Imaging system. 3,793,985, Cl. 118-637.000.
Hahn, Alan S.; and Jordan, Harold O. W., to Peinting Developments, Inc. Apparatus for coupling photographic parameters into a mechanism for the production of photographic color separations. 3,794,756, Cl. 178-5.4cd.
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Haigh, Richard Woolliscroft. Electromagnetic device. 3,794,868, Cl. 310-36.000.
Halasz, Alexander, to Clairol Incorporated. Process for N-monomethylating certain acyl or carbalkoxy nitro-P-phenylenediamines. 3,794,676, Cl. 260-471.00c.
Haley, Ernest K. Adjustable horizontal hole drilling apparatus. 3,794,435, Cl. 408-59.000.
Hall, Marchand B.; and Krack, Carl E., to United States Steel Corporation. Apparatus for forming a seal-less type joint in overlapped flat strapping. 3,794,086, Cl. 140-93.200.
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Hammond, Philip D.; Manemeit, Frederick E.; and Litz, William E., Jr., to Olin Corporation. Process for making catalytic noble metal complexes. 3,794,648, Cl. 260-270.00r.
Hammond, Philip D.; Litz, William E., Jr.; and Manemeit, Frederick E., to Olin Corporation. Process for preparing noble metal complexes. 3,794,649, Cl. 260-270.00r.
Hamrick, James Carver, to Jet Line Products, Inc. Method and apparatus for installing heavy electrical conductor lines in conduits. 3,793,732, Cl. 33-137.00r.
Hansen, John M., 1/4 each to Weston, David K. and Ferries, Kenneth C. Synthesis of speech from a magnetic tape matrin storage of phonetic segments. 3,794,753, Cl. 179-1.0sa.
Hansen, Raymond, 20% to Lee, Raymond, Organization, Inc., The. Electrical connector. 3,794,951, Cl. 339-4.000.
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Hardebeck, Klaus: *See—*
Wiedemann, Fritz; Thiel, Max; Stach, Kurt; Roesch, Egon; and Hardebeck, Klaus, 3,794,637.
Hardenberg, Horst; and Frankle, Gerhard, to Daimler-Benz Aktiengesellschaft. Process and apparatus for multi-fuel operation of an air-compressing and auto-ignition injection internal combustion engine. 3,794,007, Cl. 123-122.00d.
Harder, Richard E., to Dow Badische Company. Annular spiral ISG. 3,794,300, Cl. 259-4.000.
Hardman, Chester S., Jr.: *See—*
Harvey, Pruitt, 3,794,088.
Hardt, Lothar, to Metallgesellschaft Aktiengesellschaft. Grounding system for tubular collectors in electrostatic precipitating apparatus. 3,793,802, Cl. 55-155.000.
Harley, Robert E., to General Tire & Rubber Company, The. Method for removal of fluidized BFD particles from extruded polymeric products processed therein. 3,794,705, Cl. 264-37.000.
Harmon, Carlyle, to Johnson & Johnson. Method of making isotropic fibrous webs containing textile length fibers. 3,794,557, Cl. 162-157.00c.
Harmon, Paul E.; and Phelps, Richard W., to Black Clawson Company, The. Web cutter for single drum winder. 3,794,255, Cl. 242-56.00r.
Harms, John F. Apparatus for steam conditioning textile articles. 3,793,754, Cl. 38-141.000.
Harris, George M.; and Behnke, Wilbert E., to Harris-Hub Company, Inc. Endboard attachment means. 3,793,655, Cl. 5-296.000.
Harris, Norman E.; and Lee, Frances H., to United States of America, Army. Coating composition for foods and method of improving texture of cooked foods. 3,794,742, Cl. 426-302.000.
Harris-Hub Company, Inc.: *See—*
Harris, George M.; and Behnke, Wilbert E., 3,793,655.
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Converse, John O.; Korpi, Kenneth W.; and Diver, John R., 3,794,166.
Harvey, Pruitt, to Hardman, Chester S., Jr. Container filling device. 3,794,088, Cl. 141-237.000.
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Christie, Christopher E.; Fedor, James R.; Harwell, Ishmael S.; and Riggs, Robert S., 3,794,538.
Hasegawa, Koichi; Sekiguchi, Hisashi; and Zaitsu, Hiroshi, to Dainippon Ink and Chemicals Incorporated. Process for the preparation of bis (2,3-exhofy-2-mithyl-propyl)buttertupe epoly resin. 3,794,619, Cl. 260-47.0ep.
Haselmann, Heinrich: *See—*
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Hashimoto, Nobuyuki: *See—*
Hida, Takashi; Sakakibara, Naoji; and Hashimoto, Nobuyuki, 3,794,971.
Haslam, Harry; Massetti, Giulio; and Truesdale, Herbert W., to Ford Motor Company. Seat assembly. 3,794,378, Cl. 297-219.000.
Hasstedt, Roger D. Crane and tow unit. 3,794,296, Cl. 254-8.00b.
Hastings, Donald R.: *See—*
Tamny, Simon Z.; Hastings, Donald R.; and Wilhelm, Frederick R., 3,794,243.

Hatch, Edmond K.: *See—*
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Haussuehl, Siegfried. Strontium formate nonlinear device. 3,794,413, Cl. 350-160.00r.

Hayashi, Nobuyoshi: *See—*
Matsumaru, Hideo; and Hayashi, Nobuyoshi, 3,794,573.

Hayne, Thomas F., to Xerox Corporation. Corona generating apparatus. 3,794,839, Cl. 250-324.000.

Hays, Bill J.: *See—*
Barr, Davis N.; and Hays, Bill J., 3,793,696.

Hayward, Gary G.: *See—*
Holt, Jon G.; Hayward, Gary G.; and Goldstein, Irving, 3,793,958.

Heath, Robert A.; and Martoia, Ronald J., to Tenneco Inc. Exhaust system. 3,794,138, Cl. 181-48.000.

Hecker, Klaus J., to United States of America, Navy. Electro-optical guidance system. 3,794,272, Cl. 244-3.170.

Hehl, Karl. Automatic safety switch member. 3,794,811, Cl. 219-501.000.

Heideman, Robert J.: *See—*
Chrokey, William J.; Ellis, Larry C.; and Heideman, Robert J., 3,794,309.

Heidenmann, Rolf: *See—*
Neumann, Richard; and Heidenmann, Rolf, 3,793,952.

Heiderpriem, Theodore B. Mold for buns which have centrally-located recesses. 3,794,455, Cl. 425-403.000.

Heinard, Whilden G.: *See—*
Meek, James M.; Ravilious, Clarence F.; and Heinard, Whilden G., 3,795,003.
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Heinen, Irving J., to Aerojet-General Corporation, mesne. Valve actuating means. 3,793,893, Cl. 74-22.000.

Heinrich, Michael: *See—*
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Heiress, Steven J., to V.A.C. Industries, Inc., mesne. Method of making the probe assembly of a temperature sensor. 3,793,711, Cl. 29-595.000.

Hek, Homer C.: *See—*
Rainville, Dewey; and Hek, Homer C., 3,793,742.

Helms, Hosea W. Vise grip pliers. 3,793,914, Cl. 81-378.000.

Helser, Jerry L.; and Shannon, Richard F., to Owens-Corning Fiberglas Corporation. Method of producing calcium silicate hydrate insulation material devoid of asbestos. 3,794,505, Cl. 106-119.000.

Helsley, Grover Cleveland; and Welstead, William John, Jr., to Robins, A. H., Company, Incorporated. 1-[Omega(4-phenylpiperazinyl)alkyl]-2-methylbenzimidazoles. 3,794,651, Cl. 260-268.0bc.

Hendry, George O.: *See—*
Fleischer, Allan A.; Hendry, George O.; and Wells, Dale K., 3,794,927.

Hengtson, Eric G.; and Lanker, Lynn H., to Lever Brothers Company. Method for reducing surface cracking in extruded plastic material. 3,794,709, Cl. 264-323.000.

Henkin, Louis Lawrence: *See—*
Greuzerd, Charles F.; and Henkin, Louis Lawrence, 3,794,779.

Henn, Richard W.; Wilson, Burton D.; and Woodgate, Paul L., to Eastman Kodak Company. Photosensitive and thermosensitive element, composition and process. 3,794,488, Cl. 96-50.00r.

Henn, Ruthied; Schultze, Hans-Joachim; and Berther, Clas, to Inventa AG fur Ferschung und Patentverwertung. Process for purifying lactams. 3,794,647, Cl. 260-239.30a.

Henn, William; and Serwetman, Richard, to Raytheon Company. Digital flow processor. 3,794,974, Cl. 340-146.200.

Henry, Nelson R. Automatic filling and weighing mechanism. 3,794,157, Cl. 198-131.000.

Henry, Truett C.: *See—*
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Hercules Incorporated: *See—*
Bower, Barton K., 3,794,628.
Breslow, David S., 3,794,622.

Herman, Stanely W., to General Motors Corporation. Transmission. 3,793,909, Cl. 74-759.000.

Hernandez, Jesus Manuel. Apparatus for laying shingles or the like. 3,794,237, Cl. 227-111.000.

Hero Conserven Lenzburg: *See—*
Wieser, Werner; and Munz, Emil, 3,793,939.

Herzog, Heinz O.: *See—*
Hostettler, Fritz; and Herzog, Heinz O., 3,794,221.

Hess, Robert L.: *See—*
Spindle, Harvey E.; Meyer, Jeffry R.; and Hess, Robert L., 3,794,799.

Hetherington, Theodore W.; and Strunk, Larry L., to Tenneco Inc. Muffler with plural inlets and outlets. 3,794,139, Cl. 181-56.000.

Hewlett-Packard Company: *See—*
Ritzenthaler, Jean, 3,794,916.

Hi-Lo Powered Stirrups, Inc.: *See—*
Mauldin, William E., 3,794,298.

Hickman, Albert F. Independent wheel vehicle spring suspension. 3,794,343, Cl. 280-124.00a.

Hicks, Percy W.; and Gale, Michael R., to A.E.I. Telecommunications (Canada) Limited. Digital impulse corrector for telecommunication circuitry. 3,794,775, Cl. 179-16.0ea.

Hida, Takashi; Sakakibara, Naoji; and Hashimoto, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Vehicle speed sensing device. 3,794,971, Cl. 340-53.000.

Higgins, Gary H., to United States of America, Atomic Energy Commission. Situ coal bed gasification. 3,794,116, Cl. 166-259.000.

Higgins, Robert J., 50% to Torregrossa, Joyce Burroughs. Crane. 3,794,184, Cl. 212-46.00a.

Hill, Bernhard, to U.S. Philips Corporation. Holographic memory with image location correction. 3,794,412, Cl. 350-3.500.

Hill, Edward Williman Rowland: *See—*
De Coene, Frans Jozef; and Hill, Edward Williman Rowland, 3,794,047.

Hill, Lyle M., to Raytheon Company. Analyzer for comparing the response of an organism to a reference pattern. 3,794,968, Cl. 340-52.00r.

Hill, Robert W.: *See—*
Anderson, Raymond P.; and Hill, Robert W., 3,794,625.

Hill, Telford C., Jr. Can opener. 3,793,722, Cl. 30-6.100.

Hill, Tom H., to Esso Production Research Company. Surface controlled subsurface safety valve. 3,794,112, Cl. 166-64.000.

Hill-Rom Company, Inc.: *See—*
D'Amico, Frank J.; and Stein, William H., Jr., 3,794,395.

Hille Engineering Company Limited, The: *See—*
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Himmelmann, Wolfgang: *See—*
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Hinai, Masakatsu: *See—*
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Hinckfuss, Douglas Albert, to Zinc Corporation Limited, The. Immersible absorption probe. 3,794,836, Cl. 250-363.000.

Hirai, Tadaaki; and Maruyama, Eiichi, to Hitachi, Ltd. Image pickup device. 3,794,835, Cl. 250-211.00j.

Hiromi Yamada: *See—*
Shirota, Minoru; Fukada, Tetsuo; Ogata, Mayumi; and Yamada, Hiromi, 3,794,499.

Hirose, Yasunori, to Nippon Gakki Seizo Kabushiki Kaisha. Device for reconditioning switch contacts. 3,794,850, Cl. 307-137.000.

Hirshon, Benedict E. Method and apparatus for aerating bodies of water. 3,794,303, Cl. 261-61.000.

Hisamitsu Pharmaceutical Co., Inc.: *See—*
Yabuuchi, Takahiro; Fujimura, Hajime; Nakagawa, Akira; and Kimura, Ryuichi, 3,794,643.

Hisano, Tsuyoshi, to Matsushita Electric Works, Ltd. Remote control switch circuit. 3,794,888, Cl. 317-150.000.

Hitachi, Ltd.: *See—*
Adachi, Eiichi; and Saito, Kazutoshi, 3,794,533.
Hirai, Tadaaki; and Maruyama, Eiichi, 3,794,835.
Katakura, Kageyoshi, 3,794,964.
Sugiura, Shinzo; and Morioka, Takeshi, 3,794,133.
Watanabe, Kiyoshi; Saito, Kazuei; and Kobayashi, Tadaaki, 3,794,445.

Hite, Thomas W., to LML Engineering & Manufacturing Corp. Grain flow controller. 3,794,386, Cl. 302-60.000.

Hitzler, Robert L., to Alkco Manufacturing Co. Locking spring and hinge for cover of lighting fixture. 3,794,830, Cl. 240-147.000.

Hnatko, Karl J., to Taconite Engineering & Manufacturing Co. Lifting tool. 3,794,369, Cl. 294-96.000.

Hockensmith Corporation, The: *See—*
Steighner, John C., 3,794,189.

Hodges, Kenneth James Hamer; and Venton, Peter Charles, to Plessey Handel und Investments A.G. Memory protection arrangements for data processing systems. 3,794,821, Cl. 235-153.0am.

Hodgkinson, Raymond E., to Ethyl Corporation. Fuel system for separating volatile fuel from gasoline. 3,794,000, Cl. 123-133.000.

Hofer, Eric M.: *See—*
SimonOVermot, Andre; and Hofer, Eric M., 3,793,824.

Hoffman, Edward P., to Eastman Kodak Company. Method and apparatus for removing air from a liquid. 3,793,805, Cl. 55-49.000.

Hoffman, Harry Swartzlander, Jr.; and Knickmeyer, Kenton Hugh, to International Business Machines Corporation. Electrical converter. 3,794,906, Cl. 321-2.000.

Hoffman, Henry C.: *See—*
Cwycyshyn, Walter; Buccellato, Anthony; and Hoffman, Henry C., 3,794,350.

Hoffman, Herbert N.; and Mayor, Harry A., to General Electric Company. Process for installing base-mounted machinery subject to misalignment. 3,793,739, Cl. 33-286.000.

Hoffman Rheem Maschinen GmbH: *See—*
Engelbart, Wilhelm, 3,793,753.

Hoffmann, Peter; Marquarding, Dieter; Ugi, Var; Arlt, Dieter; and Hagemann, Hermann, to Bayer Aktiengesellschaft. Production of isonitriles. 3,794,674, Cl. 260-465.00b.

Hofman, Jan August Marcel: *See—*
Ian, Sing Liong; Hofman, Jan August Marcel; and Bouwhuis, Gijsbertus, 3,794,408.

Hogan, Elmer R.; and Simpson, John I., to Smith-Berger Manufacturing Corporation. Fish-conveying mechanism. 3,793,675, Cl. 17-59.000.

Hojyo, Nobuyoshi: *See—*
Iwata, Tokushige; Hojyo, Nobuyoshi; Ando, Tokushi; and Miwa, Masao, 3,793,873.

Holben, Eugene F., to Conoflow Corporation. Measuring fuel consumption. 3,793,882, Cl. 73-113.000.

Holfgrt, Horst: *See—*
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Holl, Martinus Johannes, to U.S. Philips Corporation. Change spindle for use in an automatic record changer. 3,794,331, Cl. 274-10.00s.

Holland, John H., to Arkansas Rock and Gravel Company. Self-unloading material delivery system. 3,794,194, Cl. 214-83.360.

Holleboom, Bruce W.; and Sweet, Douglas W., to General Motors Corporation. Electronic start control circuit for gas turbine engine. 3,793,826, Cl. 60-39.140.

Hollis, Russell E., Jr. Coupling device for use with a ball-type hitch. 3,794,356, Cl. 280-513.000.

Holloway, Gale A.: *See—*
Bromberek, Richard J.; Oliver, Robert J.; Yeh, Rudolph E.; and Holloway, Gale A., 3,794,199.

Holloway, Robert M.: *See—*
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Holmes, Kendall B.: *See—*
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Holmes, Lloyd G. Hockey puck practice shooting apparatus. 3,794,318, Cl. 273-1.00b.

Holt, Jon G.; Hayward, Gary G.; and Goldstein, Irving, to Raytheon Company. Optical fusing arrangement. 3,793,958, Cl. 102-70.20p.

Holt, Ronald, to Franklin Electric Subsidiaries, Inc., mesne. Article group assembly and forwarding conveyor for wrapping machines. 3,794,154, Cl. 198-34.000.

Holt, William David, to Lucas, Joseph, (Electrical) Limited. Control circuit for cooling fans. 3,794,896, Cl. 318-471.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honeywell Inc.: *See—*
McKinley, Richard Eugene, 3,795,013.

Honeywell Information Systems, Inc.: *See—*
Cahill, Steven P.; and Pateuk, Constantine J., 3,794,150.

Honsel, Karl-Heinz. Apparatus for folding of envelope blanks. 3,793,926, Cl. 93-62.000.

Hooker Chemical Corporation: *See—*
Wirth, Christian; and Albi, George J. (said Christian Wirth assor. to), 3,794,548.

Hoover, James E., to GAF Corporation. Film cartridge. 3,794,269, Cl. 242-144.000.

Hoover, James M.: *See—*
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Hori, Kyoichi: *See—*
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Horizons Incorporated: *See—*
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Horlein, Gerhard: *See—*
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Horvath, John F.; and Nickols, Chester R., to Aqua-Chem, Inc. Water softener valve. 3,794,061, Cl. 137-330.000.

Hosterman, Richard N.: *See—*
Price, Robert B.; and Hosterman, Richard N., 3,793,896.

Hostettler, Fritz; and Herzog, Heinz O., to Inter-Polymer Research Corporation. Cartridge for storing, mixing and dispensing a plurality of ingredients. 3,794,221, Cl. 222-190.000.

Hotta, Seiji; Yanagihara, Hideki; and Skamatsu, Takashi, to Sumitomo Chemical Company, Ltd. Process for producing 3,3-bis-(p-dimethyleminophenyl)-4,5,6 or 7 dimethylaminophthalide. 3,794,666, Cl. 260-343.300.

Houtkamp, Johannes Jacobus: *See—*
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Howard, Kal W.: *See—*
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Howe, Milton A., Jr.; Dexter, Everett H.; and Thompson, Eugene D., to Grace, W. R., & Co. Method of film sheet dispensing and wrapping. 3,793,799, Cl. 53-32.000.

Howell, Robert Gene, to TRW Inc. Electrical resistance material and method of making the same. 3,794,518, Cl. 117-227.000.

Hoyler, Robert C.: *See—*
Thorne-Booth, George M.; and Hoyler, Robert C., 3,794,977.

Hoyne, Earl K.: *See—*
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Hsia, Shwang, to Sinclair & Valentine Company, Inc. Electrostatic toner. 3,794,594, Cl. 252-62.100.

Huber, Josef; and Lenz, Ulrich, to Siemens Aktiengesellschaft. Method of error detection in program controlled telecommunication exchange systems. 3,794,973, Cl. 340-146.1be.

Huber, Richard; and Wirz, Peter, to Klinger AG. Shutoff valve. 3,794,295, Cl. 251-189.000.

Huckle, Ralph Edward, to English Numbering Machines Limited. Spool loading devices. 3,794,259, Cl. 242-71.200.

Hudson Oxygen Tnerapy Sales Company: *See—*
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Huffman, Donald D.; and Carey, Andrew J., to Westinghouse Air Brake Company. Bi-directional coded track circuits without insulated joints. 3,794,832, Cl. 246-33.00r.

Huffman, Harold W. Cross perforating blade lock. 3,793,918, Cl. 83-698.000.

Hufnagl, Walter; and Sigriz, Paul Non. Rolling deformation of wires and similar elongated elements. 3,793,869, Cl. 72-236.000.

Hughes Aircraft Company: *See—*
Dehne, Axel G., 3,793,846.
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Hughes, Guy O., to Woudstra, John C.; d/b/a Mid State Mfg. Co. Tree shaker. 3,793,815, Cl. 56-328.0ts.

Hughes, John Oliver Philip, to British Leyland Truck and Bus Division Limited. Rotary heat exchangers. 3,794,109, Cl. 165-8.000.

Hughes, Robert. Modular building system. 3,793,796, Cl. 52-79.000.

Hugonnier, Charles Andre. Hectographic duplicating machine. 3,793,948, Cl. 101-132.500.

Hujer, Friedrich, to Agfa-Gevaert Aktiengesellschaft. Film cutting apparatus. 3,793,915, Cl. 83-62.000.

Hull, R. Dell. Closed face spinning reel. 3,794,264, Cl. 242-84.20r.

Humphrey, David H. Levelling instrument. 3,793,735, Cl. 33-348.000.

Hunt, Charles J., to Vulcan Corporation. Snap-on closure opening device. 3,794,207, Cl. 220-36.000.

Hunter, Edward E., to Goodyear Tire & Rubber Company, The. Sensor for detecting wires trapped on a creel. 3,794,229, Cl. 226-25.000.

Huntington Laboratories, Inc.: *See—*
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Hurd, Charles B.; Richmond, Gerald W.; and Richmond, Leo E., to Borg-Warner Corporation. Roller bearing assembly. 3,794,393, Cl. 308-207.000.

Hurn, Richard L.: *See—*
Sadow, Peter T., Jr.; Baum, Gordon B.; and Hurn, Richard L., 3,793,776.

Huston, Paul O.; Seipp, Hermann Karl; and Riuli, Arduino E., to Becton, Dickinson and Company. Corrugated flexible hose. 3,794,080, Cl. 138-121.000.

Huszar, Josef, to Gebr. Boehler & Co. AG. Pressure fluid control valve. 3,794,290, Cl. 251-347.000.

Hutchins, Alma A. Reciprocating abrading or polishing tool. 3,793,781, Cl. 51-170.0tl.

Hutchins, Dale: *See—*
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Hydro-Vel Services, Inc.: *See—*
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Hydrodynamic Development Corporation: *See—*
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Hyyppa, Fino J.; and Reed, Chester L., to United States of America, Navy. Angle position indicator. 3,793,731, Cl. 33-1.0pt.

I-T-E Imperial Corporation: *See—*
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Ice, Charles E., Jr.; and Shanklin, Earis Ray, to Hydro-Vel Services, Inc. Tube cleaning system. 3,794,051, Cl. 134-46.000.

Ida, Nobel N.: *See—*
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Ihara, Takashi: *See—*
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Ilford Limited: *See—*
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Imamura, Kennosuke; Nabekawa, Shukichi; Otsubo, Itaru; and Kasuya, Hisashi, to Nippon Chemical Industrial Co., Ltd. Process for the production of o,o-dimethyl-o-1,2-dibromo-2,2-dichloroethyl phosphate. 3,794,702, Cl. 260-986.000.

Imazeki, Kazuyoshi, to General Research of Electronics, Inc. Frequency-skipping system for a signal-seeking receiver. 3,794,925, Cl. 325-470.000.

Immethun, Peter A.: *See—*
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Index-Werke KG Hahn & Tessky: *See—*
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Inoue, Takasi; Nagao, Shinsuke; and Nakamura, Hiroshi, to Toyo Bearing Manufacturing Company Limited. Apparatus for automatically assembling antifriction bearings. 3,793,697, Cl. 29-201.000.
Insam, Theodor, to Rud-Kettenfabrik Rieger & Dietz, mesne. Tire chain with cleats. 3,794,095, Cl. 152-239.000.
Institutul de Proiectori al Industriei Usoare: *See—*
Contantinescu, Petre B.; Barthon, Stefan; Dumitrescu, Constantin; and Alexandrescu, Mihail, 3,793,930.
Institutul Pentrui Creatie Stintifica si Tehnica (Increst): *See—*
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Ishikawa, Mineo; and Oikawa, Seiichi, to Toyoda Koki Kabushiki Kaisha. Sizing device. 3,793,775, Cl. 51-165.770.
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Iwata, Tokushige; Hojyo, Nobuyoshi; Ando, Tokushi; and Miwa, Masao, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubishi Jukogyo Kaisha. Method of hot forming of hollow mushroom type metallic parts. 3,793,873, Cl. 72-318.000.
Iwatsuji, Kazuhito; Nishibu, Masami; and Toshioka, Tohro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle with apparatus for detecting potential collisions. 3,794,997, Cl. 343-7.0ed.
Jablonski, Edward R., to McGraw-Edison Company. Arrangement for achieving holding engagement with the inside of a pipe or stem. 3,794,826, Cl. 240-54.000.
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Jacob, Jean-Baptiste; Renoulin, Roger; and Guezou, Jean, to Societe Lannionnaise d'Electronique and Compagnie Industrielle des Telecommunications. Synchronizing unit. 3,794,773, Cl. 179-15.0bs.
Jacobs, Harry Barry. Ventilating apparatus embodying selective volume or pressure operation and catheter means for use therewith. 3,794,026, Cl. 128-145.800.
Jacobs, Robert B.: *See—*
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Jet Line Products, Inc.: *See—*
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Johnson, Norman Allen. Variable pitch propeller. 3,794,441, Cl. 416-152.000.
Johnson, Preston. Centrifugal expulsion and retraction apparatus with tethered object. 3,794,323, Cl. 273-97.00r.
Johnson, Sidney D.: *See—*
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Johnston, Mack S. Dynamite detonator assembly. 3,793,954, Cl. 102-28.00r.

Johnston, Robert F., to Bell & Howell Company. Sensing fiducial markings from motion picture film. 3,794,416, Cl. 352-92.000.

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Jones, John Leslie, Sr. Door reductant body waste pad. 3,794,034, Cl. 128-290.00r.

Jones, Otho. Cleaning apparatus. 3,794,053, Cl. 134-141.000.

Jones, Peter Ronald Wright, to Multiscreen Corporation Limited. Rolling loop transport mechanism. 3,794,415, Cl. 352-184.000.

Jones, Ralph W. Connector. 3,793,858, Cl. 70-457.000.

Jones, Russell H.; Parker, Earl R.; and Zackay, Victory F., to United States of America, Atomic Energy Commission. Spheroidization of grain boundary precipitates. 3,794,532, Cl. 148-142.000.

Jordan, Harold O. W.: *See—*
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Josephson, Emanuel M., to Irving, Seidman. Devices and the art of prevention of disturbances in the tectonics of the earth's crust. 3,793,839, Cl. 61-35.000.

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Jullien-Davin, Jean, to Crouzet. Mould for injection moulding presses. 3,794,286, Cl. 249-67.000.

Jungermann, Eric, to Armours-Dial, Inc. Synergistic antiseptic compositions. 3,794,587, Cl. 252-107.000.

Jungesjo, Harald N.: *See—*
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Junkunc Bros. American Lock Company: *See—*
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Jurkiewicz, Walter J., to Robertshaw Controls Company. Method and apparatus for sensing the presence of threads on a surface. 3,793,875, Cl. 73-37.500.

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Just, George E.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George E. Bicyclo [3.1.0] hexane intermediates for producing prostaglandins F and F. 3,794,664, Cl. 260-348.00a.

Justrite Manufacturing Company, The: *See—*
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Kaas, Povl, to Svejsa A/S. Device for separating the lanes in a swimming pool for swimming race. 3,793,657, Cl. 9-8.00r.

Kabushiki Kaisha Karial Gakki Seisakusho Haniatsu-shi: *See—*
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Kadison, Gloria C. Adjustable waist band arrangement. 3,793,645, Cl. 2-221.000.

Kahling, Joachim: *See—*
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Kai, Tsunetoshi; Inoue, Mitsuhiro; Yoshida, Matuo; and Ueda, Jun-Ichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive compositions for relief structures. 3,794,494, Cl. 96-35.100.

Kaiser Aluminum & Chemical Corporation: *See—*
Kinghorn, Charles M., 3,793,871.

Kalashnikov, Petr Georgievich: *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Evgeny Emelyanovich; Nikolaenko, Evgeny Gigorievich; Stepnov, Alexandr Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,794,106.

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Kamber, Bruno; and Rittel, Werner, to Ciba-Geigy Corporation. Process for the manufacture of peptides containing cystine. 3,794,633, Cl. 260-112.500.

Kamei, Kazumi: *See—*
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Kamolz, Gerd, to International Standard Electric Corporation. Cable connector with strain relief. 3,794,959, Cl. 339-103.00m.

Kaneko, Keiji; and Ishida, Hiroshi, to Fuji Photo Film Co., Ltd. Bug conveyor system with automatic edge pressing. 3,794,315, Cl. 269-56.000.

Kaneko, Tamaki; and Mizuno, Katsumi, to Ricoh Co., Ltd. Combination new master supply and used master receiving assembly. 3,793,950, Cl. 101-142.000.

Kaner, Gary M.: *See—*
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Kanfer, Herman: *See—*
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Kano, Ichiro; and Yamada, Yu, to Canon Kabushiki Kaisha. Projected image viewing device. 3,794,421, Cl. 355-45.000.

Kanou, Kimio: *See—*
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Kapff, Staxt Frederick: *See—*
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Kaplan, Sam H.; and Stachniak, Raymond M., to Zenith Radio Corporation. Interchangeable shadow mask. 3,794,873, Cl. 313-85.00s.

Karady, Sandor: *See—*
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Karge, Joseph R.: *See—*
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Kariyone, Kazuo; and Yazawa, Hisatoyo, to Fujisawa Pharmaceutical Co., Ltd. Pyrrolo-benzodiazepinone compounds. 3,794,644, Cl. 260-239.370.

Kartridg Pak Co., The: *See—*
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Kasabian, Jack: *See—*
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Kasper, Andreas; and Dietze, Wolfgang, to Siemens Aktiengesellschaft. Apparatus for the production of closed end tubes of semiconductor material. 3,793,984, Cl. 118-48.000.

Kastning, Ernst-Guenther: *See—*
Bronstert, Klaus; Kastning, Ernst-Guenther; Kurze, Joachim; Ladenberger, Volker; and Stein, Dieter, 3,794,697.

Kastning, Marie-Louise Hermine: *See—*
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Kasuga, Akira: *See—*
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Kasuya, Hisashi: *See—*
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Katakura, Kageyoshi, to Hitachi, Ltd. Ultrasonic imaging device. 3,794,964, Cl. 340-1.00r.

Kato, Kiroshi: *See—*
Akashi, Goro; Fujiyama, Masaaki; Kasuga, Akira; Yamada, Yasuyuki; Suzuki, Osamu; Nakamura, Matsuaki; Sega, Kenji; and Kato, Kiroshi, 3,794,519.

Kato, Yoshiaki: *See—*
Kobayashi, Kengo; and Kato, Yoshiaki, 3,794,900.

Kawaguchi, Toyohiro; and Mizutani, Isao, to Toyo Contact Lens Co., Ltd. Apparatus for grinding inner and outer curved surfaces of a contact lens block simultaneously. 3,793,774, Cl. 51-117.000.

Kawai, Shoji, to Momoi Fishing Net Manufacturing Co., Ltd. Fishing net. 3,793,822, Cl. 57-140.0by.

Kawai, Yoshihiko; and Ihida, Mutsumi, to Nippon-Kokan Kabushiki Kaisha. Method for quick quantitative analysis of the content of metallic aluminium in a batch of molten metals. 3,794,569, Cl. 204-1.00t.

Kay, Walter: *See—*
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Kay, Walter; and Poelvoorde, Raymond M., to Kay, Walter. Combination litter container and display device. 3,793,756, Cl. 40-306.000.

Kaye, Gordon E. Battery assembly. 3,794,525, Cl. 136-108.000.

Keating, Raymond J.; Shuh, Lewis M.; and Wells, Roy E., to Kartridg Pak Co., The. Apparatus for hermetically sealing a package. 3,793,688, Cl. 29-33.500.

Keck, Johannes: *See—*
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Kehr, William D.: *See—*
Cole, Thomas R., III; Kehr, William D.; and Wiitala, James R., 3,793,705.

Keith, James M., to Marcona Corporation. Apparatus and method for anchoring submerged conduit. 3,793,845, Cl. 61-72.100.

Kelley Manufacturing Company: *See—*
Whitesides, Jack C., 3,794,123.

Kellner, Irving, to Lee, Raymond, Organization, Inc., The. Disposable apron. 3,793,644, Cl. 2-49.000.

Kellwood Company: *See—*
Matthews, Robert M.; and Petty, Albert W., 3,793,649.

Kemmerly, Richard C.; Kaner, Gary M.; and Merritt, Gary C., to Courtesy Communications Corporation. Telephone audio program system. 3,794,774, Cl. 179-81.00r.

Kemmetmueller, Roland, to American Waagner-Biro Company, Inc. Apparatus for drying coal. 3,793,743, Cl. 34-57.00a.

Kendall Company, The: *See—*

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Kendall Company, The, mesne: *See—*
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Kennametal Inc.: *See—*
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Kennedy, Eugene F., to Continental Oil Company. Anionic surfactant slurry containing dihexyl ether as viscosity reducer and method of providing said slurry. 3,794,601, Cl. 252-355.000.

Kennedy, John Frederick: *See—*
Barker, Sidney Alan; Kennedy, John Frederick; and Epton, John, 3,794,563.

Kennedy, Peter D., to United States of America, Navy. Automatic memory test and correction system. 3,794,818, Cl. 235-153.0am.

Keown, Robert William; and Nyce, Jack Leland, to Du Pont de Nemours, E. I., and Company. Aliphatic liquid-peptizable chlorinated butadiene polymer blends. 3,794,634, Cl. 260-33.60a.

Kesling, Peter C.: *See—*
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Khasin, Kim Moiseevich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,794,104.

Khatti, Ramkishan, to Allis-Chalmers Corporation. Electrolic control valve. 3,793,831, Cl. 60-471.000.

Kilcher, Fredy. Sliding and deformable bearing for insertion between building components. 3,794,390, Cl. 302-3.00r.

Kilian, Gunter: *See—*
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Kilner, Oliver H., to Texas Instruments, Incorporated. Overcurrent protection system and sensor used therewith. 3,794,950, Cl. 338-23.000.

Kim, Chang-Kyo, to United States of America, Atomic Energy Commission, mesne. Thermoelectric converter. 3,794,527, Cl. 136-208.000.

Kim, Yung K., to Dow Corning Corporation. Perfluoroalkyl silicon compounds containing sulfur. 3,794,672, Cl. 260-448.200.

Kimura, Hiroshiro; Yoshii, Seiji; and Tanaka, Masao, to Unitaka Ltd. Apparatus for purifying waste liquids. 3,794,171, Cl. 210-205.000.

Kimura, Ryuichi: *See—*
Yabuuchi, Takahiro; Fujimura, Hajime; Nakagawa, Akira; and Kimura, Ryuichi, 3,794,643.

Kimura, Shoji; and Ishida, Noboru, to Nippon Oil Co., Ltd. Lubricating oil composition. 3,794,586, Cl. 252-51.50r.

Kind, Guy, to Goodyear Tire & Rubber Company, The. Pneumatic tire. 3,794,097, Cl. 152-356.000.

Kinghorn, Charles M., to Kaiser Aluminum & Chemical Corporation. Blank holder device. 3,793,871, Cl. 72-349.000.

Kinoshita, Joseph, to Underwood Rivers Company. Carrier for portable heater. 3,793,643, Cl. 2-66.000.

Kirch, William: *See—*
Aboutboul, Henri A.; Krekeler, Jerome H.; and Kirch, William, 3,794,712.
Aboutboul, Henri A.; Krekeler, Jerome H.; and Kirch, William, 3,794,713.

Kirk, Harold L., to American Air Filter Company, Inc. Control arrangement for air ventilating and air heating systems having automatic reset and manual reset safety devices. 3,794,460, Cl. 431-37.000.

Kise, Mearl A.: *See—*
Ellis, Leonard C.; and Kise, Mearl A., 3,794,738.

Kishi, Heiji; Takigami, Katshuiko; and Shirasaka, Yoshihiro, to Tokyo Shibayra Electric Company, Ltd. Static type electric circuit breaker. 3,794,885, Cl. 317-33.0sc.

Kishimoto, Juji, to Canon Kabushiki Kaisha. System for driving liquid crystal display device. 3,794,990, Cl. 340-336.000.

Kissell, Ronald E.: *See—*
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Kitamura Valve Mfg. Co., Ltd.: *See—*
Soyana, Ryoji, 3,794,291.

Klasson, George A., to Air Products and Chemicals, Inc. Plasma arc welding torch. 3,794,806, Cl. 219-121.00p.

Klecak, George. Buzzing pyrotechnic device and method. 3,793,955, Cl. 102-31.000.

Kleiner, Eduard Karl; and Knell, Martin, to Ciba-Geigy Corporation. Perfluoroalkyl group containing a, B-unsaturated di- and triesters and polymers thereof. 3,794,623, Cl. 260-78.40e.

Kleinmann, Earl E., to Phillips Petroleum Company. Multilayered, insulated fluid tank and structure. 3,793,976, Cl. 114-74.00a.

Klem, Adrianus; and Vlasbioem, Hugo, to N.V. Optische Industrie de Oude Delft. Device for determining the position coordinates of a light-impulse emitting point. 3,794,837, Cl. 250-366.000.

Klem, Charles D.; Riall, Robert T.; and Wallace, Richard A., to Sperry Rand Corporation. Precision reference pressure supply system. 3,794,070, Cl. 137-487.500.

Klinger AG: *See—*
Huber, Richard; and Wirz, Peter, 3,794,295.

Klomp, Edward D., to General Motors Corporation. Rotary machine apex seal. 3,794,450, Cl. 418-117.000.

Klopfenstein, Floren R.; and Duff, Gene J. Apparatus for alerting vehicle driver. 3,794,969, Cl. 340-52.00r.

Kloss, Hans Joachim, to Montz, Julius, Firma, GmbH. Apertured column tray provided with bubble caps. 3,794,305, Cl. 261-114.00a.

KLT Industries, Inc.: *See—*
Traeger, Robert S., 3,793,988.

Knabe, Frank-Torsten, to International Standard Electric Corporation. FM pulse discriminator for duplex FM system. 3,794,757, Cl. 178-58.000.

Knecht, Hillery G. Coupling apparatus for the mooring of boats or the like. 3,793,685, Cl. 24-230.0an.

Kneier, Joseph W., to Pendleton Tool Industries, Inc. Handle assembly. 3,793,674, Cl. 16-126.000.

Knell, Martin: *See—*
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Kneuer, Joseph George: *See—*
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Knickmeyer, Kenton Hugh: *See—*
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Knox, John A.; and Lasater, Reginald M., to Halliburton Company. Treatment of sandstone formations. 3,794,117, Cl. 166-307.000.

Knutsson, Ake. Countersink assembly. 3,794,438, Cl. 408-231.000.

Kobayashi, Kengo; and Kato, Yoshiaki, to Fujitsu Limited and Fujitsu Fanuc Limited. Pulse interpolation systems. 3,794,900, Cl. 318-603.000.

Kobayashi, Tadaaki: *See—*
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Koble, Robert L., Jr.; and Goettl, John M. Pool-cleaning apparatus. 3,794,052, Cl. 134-167.00r.

Kock, Manfred; and Weiss, Hermann, to U.S. Philips Corporation. Method of and apparatus for optical multiple filtering. 3,794,406, Cl. 350-162.0sf.

Koda, Nobuo J.; and Ebert, John S., to Hughes Aircraft Company. Operationally rugged direct view storage tube. 3,794,871, Cl. 313-68.00r.

Kodama, Mikio, to Fuji Spinning Co., Ltd. Continuous yarn treating method. 3,793,816, Cl. 57-164.000.

Koeln-Stammheim, Heinrich; and Vollmann, Heinrich, to Bayer Aktiengesellschaft. Asymmetrically disubstituted isoindolines. 3,794,659, Cl. 260-305.000.

Koeniger, Erich A. Device for inspecting eye-contacting surfaces of contact lenses. 3,794,429, Cl. 356-124.000.

Koh-I-Noor Rapidograph Inc.: *See—*
Kuparinen, Lasse, 3,794,214.

Kohn, Gustave K.: *See—*
Brown, Melancthon S., 3,794,733.

Kokx, Darrel Dayfield; and Smith, Grace Lechner, to Procter & Gamble Company, The. Catamenial wetness indicator. 3,794,024, Cl. 128-285.000.

Kollner, Paul; and Duczek, Ewald, to Linde Aktiengesellschaft. Apparatus for cryosurgery. 3,794,039, Cl. 128-303.100.

Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Someya, Taichi, to Takasago Perfumery Co., Ltd. Process for the production of squalene-type hydrocarbons. 3,794,692, Cl. 260-677.00r.

Komatsu, Ikuo I.: *See—*
Gallanis, George P.; and Komatsu, Ikuo I., 3,794,050.

Komiya, Takao; Tosaka, Umi; Ihara, Takashi; Matsuo, Takehiko; and Ohara, Katsunobu, to Canon Kabushiki Kaisha. Manufacture of electrophotographic plates. 3,794,539, Cl. 156-309.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Ishihara, Masao; Wada, Tsuneo; Yamaguchi, Hisashi; and Sugita, Sadao, 3,794,495.

Koons, Charles E.: *See—*
Madalozzo, David D.; Koons, Charles E.; McGuire, Michael E.; and Jones, Earl D., 3,793,819.

Korpel, Adrianus, to Zenith Radio Corporation. System for translating sound-borne character or pattern information into optical form. 3,794,975, Cl. 340-146.30f.

Korpi, Kenneth W.: *See—*
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Koshar, Robert J., to Minnesota Mining & Manufacturing Company. Substituted bis(fluoroalkylsulfonyl) halomethanes. 3,794,687, Cl. 260-607.00a.

Kotheimer, William C., to General Electric Company. Long-time delay circuit employing high-impedance level detector. 3,794,860, Cl. 307-272.000.

Koump, Valentin, to Urban Reclamation Technologies, Inc. High speed continuous casting system. 3,794,108, Cl. 164-283.00s.

Kouth, Herbert, to Golde, H. T., GmbH, Firma. Safety molding for electrically actuated sliding windows. 3,793,772, Cl. 49-28.000.

Kouwenwoven, Herman W.: *See—*

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Krabacher, Roy A., to General Electric Company. Mixer fabrication. 3,793,865, Cl. 72-197.000.
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Krafft, Werner; and Kruck, Peter, to Agfa-Gevaert Aktiengesellschaft. Process of applying a polymeric adhesive layer between a photochromic spiropyran compound containing layer and a polyester film support. 3,794,513, Cl. 117-34.000.
Kramer, Hyman. Portable pedestal for lawn umbrellas, stanchions, and the like. 3,794,279, Cl. 248-44.000.
Kramer, Piet: *See—*
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Krapcho, John; and Bernstein, Jack, to Squibb, E. R., and Sons, Inc. Benzoxazepimes and benzothiazephines. 3,794,639, Cl. 260-238.30b.
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Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Evgeny Emelyanovich; Nikolaenko, Evgeny Gigorievich; Stepnov, Alexandr Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,794,106.
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Kretschmer, Paul. Fastening arrangement for decorative wheel rings. 3,794,385, Cl. 301-37.00p.
Kroes, Donald P.; and Lassen, Matthew S., to GTE Automatic Electric Laboratories, Incorporated. Arrangement for integrating switching systems of different types. 3,794,772, Cl. 179-16.0eg.
Kroll, Fridthof Berg; and Lang, Berthold Gerhard. Change-over unit for hoisting appliances. 3,794,185, Cl. 212-105.000.
Kronberg, Sven Gunnar: *See—*
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Krupansky, Carl S. Waterproof flashlight. 3,794,825, Cl. 240-10.630.
Kuga, Mutsuo; Mashimo, Takeshi; and Tsuruta, Motohiro, to Unitika Kabushiki Kaisha. Polyamide films. 3,794,547, Cl. 161-1.000.
Kuhn, Patrick, to Clark Equipment Company. High dump bucket linkage. 3,794,191, Cl. 214-774.000.
Kuiper, Adrianus: *See—*
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Kunin, Robert, to Rohm & Haas Company. Removal of poisons and drugs from blood. 3,794,584, Cl. 210-24.000.
Kunstle, Gerhard: *See—*
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Kuris, Arthur; Balamuth, Lewis; and Farina, Anthony P., to Ultrasonic Systems, Inc. Ultrasonic replaceable shaving head and razor. 3,793,723, Cl. 30-45.000.
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Kuster, Heinz; and Brorsson, Bjorn. Arrangement for shed formation. 3,794,082, Cl. 139-55.000.
La Grouw, Coenraad Maria, to U.S. Philips Corporation, mesne. Glass for cathode-ray tubes for television display. 3,794,502, Cl. 106-52.000.
La Hay, James F.: *See—*
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Lackme, Claude; Digonnet, Albert; Colas, Louis; Boctin, Jean; Dal Pont, Jean-Pierre; and Papillon, Bernard, to Rhone-Progil. Process for aerating biological suspensions. 3,794,582, Cl. 210-11.000.
Lacroix, Roger, to Sea Tank Co. Self-stabilizing submarine tank. 3,793,842, Cl. 61-46.000.
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Ladeur, Peter, to Shell Oil Company. Hydrocracking process. 3,794,580, Cl. 208-110.000.
Ladouceur, Harold A., to Multifastener Corporation. Method of forming a fastener. 3,793,658, Cl. 10-86.00f.
Lahtvee, Toivo; Sethi, Bal Krishan; and Stark, William Hubbard, to Spring Chemicals Limited. Process for reducing the amount of calcium contained in magnesium-base waste sulfite liquor by the use of an ammonium compound and additional calcium. 3,794,718, C. 423-512.000.
Lakeside Manufacturing Inc.: *See—*
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Lal, Joginder; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Blends of ethylene-propylene rubbers and C5-C10-alpha-olefin polymers. 3,794,696, Cl. 260-897.00a.
Lalk, Robert H.: *See—*
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Lambertsen, Christian J. Dual mode mixed gas breathing apparatus. 3,794,021, Cl. 128-142.200.
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Lidorenko, Nikolai Stepanovich; Landsman, Arkady Pavlovich; Strebkov, Dmitry Semenovich; Zaitseva, Aita Konstantinovna; Zadde, Vitaly Vinktorovich; and Kosarev, Viktor Sergeevich, 3,793,713.
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Larraide, Edward; and Butler, Bryan V., to Vetoo Offshore Industries, Inc. Variable rate hydraulic-pneumatic weight control and compensating apparatus. 3,793,835, Cl. 60-413.000.
Larsen, Odd; and Johnson, Carl N., to Texas Instruments, Incorporated. Solid state motor starting apparatus. 3,794,949, Cl. 338-22.00r.
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Latinen, George A.; deceased (by Latien, May V.; administratrix), to Monsanto Company. Continuous polymerization apparatus. 3,794,471, Cl. 23-285.000.
Latone, Salvatore. Toner reclaiming system for electrostatic printing machines. 3,793,986, Cl. 118-637.000.
Latos, Edwin J., to Universal Oil Products Company. Working of nonferrous metals. 3,794,595, Cl. 252-42.100.
Lauchlan, Robert L.; and Snodgrass, Hugh E., to Uniroyal, Inc. Modified polyarylene polyether resin compositions. 3,794,693, Cl. 260-823.000.
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Lawrence, Edwin F., Jr., to Lawrence Brothers, Inc. Laterally adjustable door hanger. 3,793,673, Cl. 16-97.000.
Lay, Clark M.; Burkhardt, James H., Jr.; and Davidson, Thomas W., to United States of America, Atomic Energy Commission. Continuous dynamic error monitoring device for numerically controlled machines. 3,794,814, Cl. 235-92.0mp.
Lazar, Melvin E.; and Lund, Daryl B., to United States of America, Agriculture. Deactivation of inner core enzymes by retained blanching heat. 3,794,500, Cl. 426-511.000.
Lazet, Frank J.; and Ahern, John R., to Philadelphia Quartz Company. Method of preparing a soluble silicate flakes or fibers. 3,794,475, Cl. 65-5.000.
Le Velle, James A.: *See—*
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Leesona Corporation: *See—*
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Lefebvre, Roger M., to Societe Francaise d'Agrafage Industrieel. Cutting device, particularly for positioning fasteners. 3,793,919, Cl. 83-583.000.
Lega, Berlando; and Cecchi, Giannangiolo, to Texfluid S.n.c. di G. Cecchi e B. Continuously operating centrifugal hydroextractor provided with a mechanical timer. 3,794,177, Cl. 210-377.000.
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Leiber, Heinz; and Wehde, Heinz, to Teldix G.m.b.H. Anti-skid brake control apparatus for sensing changes in the absolute rotational speed of a vehicle wheel. 3,794,143, Cl. 188-181.00a.
Leibowitz, Lawrence M.; and Baldauf, Richard K., to United States of America, Navy. Feedback integrator with pedestal elimination. 3,794,994, Cl. 343-5.0dp.
Leibundgut, Hans Ulrich, to Saia AG. Electrical switch. 3,794,788, Cl. 200-67.00d.
Leifheit, Gunter; and Liebscher, Johannes, to Leifheit International Gunter Leifheit KG. Cleaning device. 3,793,664, Cl. 15-50.00c.
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Lerner, Irwin S., to Robins, A. H., Company, Incorporated. Intrauterine device saddle inserter. 3,794,025, Cl. 128-130.000.
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Lester Electrical of Nebraska, Inc.: *See—*
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Leufnberger, Pierre, to Creusot-Loire. Automotive truck for moving loads on a mobile platform. 3,793,959, Cl. 104-1.00r.
Levak, Michael. Hand tool for installing points, condensers and other devices. 3,793,693, Cl. 29-203.00h.
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Lewis, G. B., Company: *See—*
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Leyland, Kenneth, to Rists Wires and Cables Limited. Electrical switches. 3,794,790, Cl. 200-86.00r.
Liddy, Clarence, to Mobil Oil Corporation. Lubricants comprising a dimer or a trimer of a $C_{18}$ monocarboxylic acid. 3,794,585, Cl. 252-28.000.
Lidorenko, Nikolai Stepanovich; Landsman, Arkady Pavlovich; Strebkov, Dmitry Semenovich; Zaitseva, Aita Konstantinovna; Zadde, Vitaly Vinktorovich; and Kosarev, Viktor Sergeevich. Semiconductor photoelectric generator and method of its manufacture. 3,793,73, Cl. 29-583.000.
Liebig, Hans-Peter; and Umbach, Gunter, to Westinghouse Bremsen- und Apparatebau GmbH. Bellows-type dust boot with expandable sleeve. 3,793,892, Cl. 74-18.200.
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Lindsay, Eugene A. Convertible desk and conference table. 3,794,398, Cl. 312-241.000.
Linehan, John H.; and Jaskolski, Stanley V. Electrically non-conductive hospital bed. 3,793,652, Cl. 5-63.000.
Ling, Robin Sydney Mackwood; and Lee, Alan John Clive, to National Research Development Corporation. Prosthetic bone joint having a spacer device. 3,793,650, Cl. 3-1.000.
Linton, John C.; and Berry, Gordon W., to Fuse Indicator Corporation. Blown fuse indicators. 3,794,948, Cl. 337-242.000.
Lipoma, Samuel P. Liquid treatment and extraction apparatus. 3,793,937, Cl. 99-355.000.
Lippisch, Guillermo W., to Junkunc Bros. American Lock Company. Padlock and key cylinder release. 3,793,856, Cl. 70-38.00a.
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Lively, David H.; Shah, Ramesh M.; and Whitney, John G., to Lilly, Eli, and Company. Process for the production of anticapsin. 3,794,564, Cl. 195-80.00r.
Livingston and Doughty, Limited: *See—*
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Lloyd, Milton H., to United States of America, Atomic Energy Commission. Solvent extraction process for producing low-nitrate and large-crystal-size $PuO_2$ sols. 3,794,715, Cl. 423-251.000.
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Locke, Oscar Verlon. Adjustably mounted camper step assembly. 3,794,345, Cl. 280-163.000.
Lockhart, Bill E.; and Scholl, Solomon P. Handle for thermos bottle. 3,794,370, Cl. 294-31.200.
Lockheed Aircraft Corporation: *See*—
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Lockheed Missiles & Space Company, Inc.: *See*—
Wood, Walter A.; and Hutchins, Dale, 3,794,134.
Lockwood Corporation: *See*—
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Lockwood, George H. Adjustable sprinkler valve. 3,794,249, Cl. 239-539.000.
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Lofquist, Robert Alden; Saunders, Peter Reginald; and Weedon, Gene Clyde, to Allied Chemical Corporation. Alkoxylated aliphatic polyethylenimines to inhibit ozone fading of dyed polyamides. 3,794,464, Cl. 8-165.000.
Logan, Warner C., to Ajax Manufacturing Company, The. Forging press feed mechanism. 3,793,872, Cl. 72-422.000.
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Long, Raymond E.; and Boles, Ralph C., Jr. Super heated vapor driven vehicle. 3,794,801, Cl. 219-10.550.
Long, Ronald E., to Lester Electrical of Nebraska, Inc. Battery charger control. 3,794,905, Cl. 320-20.000.
Loomba, Yogendra S., to Allied Chemical Corporation. Cap assembly. 3,794,211, Cl. 220-89.00a.
Lopez, Enrique; Spidle, Robert D.; and Beazley, Aubrey Glenn, to Farah Manufacturing Company, Inc. Fabric turnover device. 3,794,153, Cl. 198-270.000.
Love, Samuel L.; and Swain, Paul E., to Butler Manufacturing Company. Frame construction with yieldable knee brace connection. 3,793,790, Cl. 52-393.000.
Loving, John M. Soil conditioning process. 3,794,479, Cl. 71-9.000.
Low, John L., III: *See*—
Archer, Bill; and Low, John L., III, 3,793,794.
Lowenhaupt, Edward Harris, III; Edmunds, Edward, Jr.; and Eliasen, Richard Dean, to S.E.C. Corporation. Reduction of nickel contamination by zinc in α-hydroxy oxime extract. 3,794,719, Cl. 423-139.000.
Lucas Aerospace Limited: *See*—
Brennan, David John; and Williams, Loraine Leonard, 3,794,887.
Maltby, Peter John; Malpass, Alan; and Ellis, Kenneth Harold, 3,794,276.
Lucas, Joseph, (Electrical) Limited: *See*—
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Tromans, Keith, 3,794,795.
Lucas, Joseph, (Industries) Limited: *See*—
Tomlinson, Neil, 3,794,785.
Lucas, Paul Adrian, to Mobil Oil Corporation. Tie-band applicator apparatus. 3,794,545, Cl. 156-519.000.
Ludington, Robert L.; and Holloway, Robert M. Empty-load braking apparatus. 3,794,146, Cl. 188-195.000.
Luft, Robert G.; and Halvorson, Leroy G., to International Harvester Company. Electro pneumatic shift control. 3,793,908, Cl. 74-870.000.
Lugovsky, Vladimir Ivanovich: *See*—
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,794,104.
Lukas, Josef: *See*—
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Lummus Company, The: *See*—
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Lund, Daryl B.: *See*—
Lazar, Melvin E.; and Lund, Daryl B., 3,794,500.
Luther, Harald Johan, to Misomex Aktiebolag. Method for preparing printing forms and the like for continuous patterns. 3,794,486, Cl. 96-37.000.
Luthi, Oscar, to Improved Machinery Inc. Rotary drum filtering apparatus and unitary drainage sectors therefor. 3,794,178, Cl. 210-404.000.
Ly, Manuel G.: *See*—
Sletzinger, Meyer; Karady, Sandor; and Ly, Manuel G., 3,794,681.
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Macaluso, Russell A.; and Michalski, Raymond J., to Nalco Chemical Company. Method for preventing the freezing together of coal particles. 3,794,472, Cl. 44-6.000.
Machmer, James Andrew, to International Business Machines Corporation. High speed printing system with heated roll fuser. 3,794,417, Cl. 355-3.000.
Madalozzo, David D.; Koons, Charles E.; McGuire, Michael E.; and Jones, Earl D., to Anaconda Company, The. Quist strander. 3,793,819, Cl. 57-58.520.
Magne, Frank C.: *See*—
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,794,640.
Mahoney, Thomas P.: *See*—
Greuzerd, Charles F.; and Henkin, Louis Lawrence, 3,794,779.
Maida, Osamu, to Nippon Kogaku K.K. Exposure meter having means for preventing erroneous metering. 3,794,430, Cl. 356-226.000.
Maier, Roland; and Sauter, Robert, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing certain 3-nitro-furyl-4-azolidinylidene-azolones-5-and method of use. 3,794,725, Cl. 424-270.000.
Maikish, Charles R.; and Wiant, Herman R., to General Dynamics Corporation. Method of reshaping metal matrix composite material. 3,793,700, Cl. 29-419.000.
Mains, Harold Eugene; O'Brien, William Leo; Oehlschlaeger, H. Fred; Sharkey, Hubert Joseph; and Vatl, Robert Elwood, Jr., to Emery Industries, Inc. Copolyester fiber compositions having improved flame retardant properties. 3,794,617, Cl. 260-47.00c.
Majeske, John Drexel Hill. Implements for holding and turning comestibles. 3,794,368, Cl. 294-5.000.
Makino, Katsuo; Yoshikawa, Akira; and Nagashima, Toshio, to Xerox Corporation. Imaging system. 3,794,418, Cl. 355-3.000.
Mako, John: *See*—
Barcomb, James G.; and Mako, John, 3,794,903.
Malin, Jack, to Security Instruments, Inc. Electrical terminal for conductive foil. 3,794,953, Cl. 339-17.00c.
Malkiel, Arick S. Floating breasting platform. 3,793,843, Cl. 61-46.000.
Malkus, Boris Lvovich: *See*—
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Mallett, Paul H.; and Pipes, Calvin, said Pipes assor. to said Mallett, Paul H. Timing system for timing a series of events. 3,794,918, Cl. 324-186.000.
Malmoren, Per Ake; and Johansson, Kurt Eilert, to Ake Malmgrens Mekaniska Vekstad AB. Device for weighing of vehicle loads. 3,794,130, Cl. 177-137.000.
Malpass, Alan: *See*—
Maltby, Peter John; Malpass, Alan; and Ellis, Kenneth Harold, 3,794,276.
Maltby, Peter John; Malpass, Alan; and Ellis, Kenneth Harold, to Lucas Aerospace Limited. Electro-hydraulic actuating systems for aircraft control surfaces. 3,794,276, Cl. 244-78.000.
Manemeit, Frederick E.: *See*—
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Hammond, Philip D.; Litz, William E., Jr.; and Manemeit, Frederick E., 3,794,649.
Manhardt, John R., to Itek Corporation. Photographic processes and imaging media therefor. 3,794,496, Cl. 96-114.100.
Manko, Howard; and Langan, James, to Alpha Metals, Inc. Electroplating chromium with a non-consumable chrome plating anode. 3,794,570, Cl. 204-51.000.
Manley, Emory T.: *See*—
Manley, William I.; and Manley, Emory T., 3,794,989.
Manley, William I.; and Manley, Emory T. Appliance theft alarm system. 3,794,989, Cl. 340-280.000.
Manning, Donald L., to General Motors Corporation. Bus side panel. 3,794,373, Cl. 296-28.00a.
Manning, Donald Lee, to General Motors Corporation. Transit vehicle body module. 3,794,374, Cl. 296-28.00a.
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Marconi Company Limited, The: *See*—
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Margetts, Hugh Grenville, to Girling Limited. Vehicle brake adjuster. 3,794,145, Cl. 188-79.50p.

Margotte, Dieter: *See—*
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Marine Construction & Design Co.: *See—*
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Marjuschenko, Vilen Fedorovich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,794,104.

Marks, Walter J., to Anchor Cap & Closure Corporation of Canada Limited. Safety closure and package. 3,794,200, Cl. 215-9.000.

Markworth, Manfred; Lynker, Friedrich Wilhelm; and Rosenkranz, Wilhelm; deceased (by Rosenkranz, Barbara; legal representative), to Fuchs, Otto, Meinerzhagen, Firma. Method of using a highly stable aluminum alloy in the production of recrystallization hardned products. 3,794,531, Cl. 148-159.000.

Marley Company, The: *See—*
Cates, Robert E.; and Mitchell, Robert M., 3,794,304.

Marosvolgyi, Sandor: *See—*
Gorog, Katalin, nee Privitizer; Bruckner, Gyorgyi; Farkas, Kalman; Grega, Erzsebet; Marosvolgyi, Sandor; Pinter, Zoltan; and Szilagyi, Gyula, 3,794,641.

Marquarding, Dieter: *See—*
Hoffmann, Peter; Marquarding, Dieter; Ugi, Var; Arlt, Dieter; and Hagemann, Hermann, 3,794,674.

Marquez, Fidencio G. Accessory water heater for a gas-fired water heater. 3,793,992, Cl. 122-20.00b.

Marsh, Donald B.: *See—*
Auer, John H., Jr.; Marsh, Donald B.; and Sibley, Henry C., 3,794,834.

Marshall, Preston F., to Kendall Company, The. Pneumatic drafting of fibrous strands. 3,793,679, Cl. 19-156.300.

Marshman, Frank E.: *See—*
Mooney, John J.; Marshman, Frank E.; and Donlon, Richard H., 3,793,963.

Martin, Charles T., Jr.: *See—*
Salzer, Thomas; and Martin, Charles T., Jr., 3,794,236.

Martin, Donald J.: *See—*
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Martin, Eugene Earl: *See—*
Christie, Christopher E.; and Martin, Eugene Earl, 3,794,706.

Martin, John C., to Bunn-O-Matic Corporation. Automatic coffee maker with liquid lever sensor and siphon control. 3,793,934, Cl. 99-282.000.

Martin, John C., to Bunn-O-Matic Corporation. Coffee making machine convertible between final filter operation and pouch pack operation. 3,793,935, Cl. 99-295.000.

Martin, Joseph A.; and Hoover, James M., to Esterline Corporation. Electronic watt transducer. 3,794,917, Cl. 324-142.000.

Martin, Louis E., to Societe Anonyme Poclain. Device driving a heavy body in reciprocating motion. 3,793,834, Cl. 60-413.000.

Martin, William A., to Eastman Kodak Company. Web tension regulating apparatus. 3,794,231, Cl. 226-36.000.

Martiniak, Leonard J.; and Race, Marlin L., to General Electric Company. Spray actuator for refuse compactor. 3,793,942, Cl. 100-73.000.

Martinotti, Luigi, to Brinil S.A. Machine for making spouts and fixing same in containers. 3,793,970, Cl. 113-1.00h.

Martoia, Ronald J.: *See—*
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Maruyama, Eiichi: *See—*
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Mashimo, Takeshi: *See—*
Kuga, Mutsuo; Mashimo, Takeshi; and Tsuruta, Motohiro, 3,794,547.

Masi, James Vincent. Liquid crystal cell and method for its manufacture. 3,794,405, Cl. 350-160.01c.

Massachusetts Institute of Technology: *See—*
Dimmock, John O.; Melngailis, Ivars; and Strauss, Alan J., 3,794,844.
Ramrath, Frank A., 3,795,012.

Massetti, Giulio: *See—*
Haslam, Harry; Massetti, Giulio; and Truesdale, Herbert W., 3,794,378.

Masuda, Noboru, to Denki Onkyo Co., Ltd. Galvano-magneto effect apparatus. 3,794,864, Cl. 307-309.000.

Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. High-permeability Ni-Fe-Ta alloy for magnetic recording-reproducing heads. 3,794,530, Cl. 148-31.550.

Mathers, James E.: *See—*
Mehalchick, Emil J.; and Mathers, James E., 3,794,597.

Mathews, Clinton S., to De Laval Turbine California, Inc. Spark ignition system. 3,794,008, Cl. 123-148.0ds.

Matsuda, Ken: *See—*
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Matsui, Masanao; and Ueda, Kenzo, to Sumitomo Chemical Company, Ltd. Preparation of pure (±)- trans-chrysanthemic acid. 3,794,680, Cl. 260-514.00h.

Matsuishi Fukai Tekkosho, Ltd.: *See—*
Iwasaki, Shigeo, 3,794,458.

Matsukawa, Hidehiko; Ito, Haruo; and Suzuki, Taneko. Biologically active peptide and method of preparing the same. 3,794,561, Cl. 195-29.00r.

Matsumaru, Hideo; and Hayashi, Nobuyoshi, to Takeda Chemical Industries, Ltd. Method for the production of L-ascorbic acid. 3,794,573, Cl. 204-159.000.

Matsuo, Takehiko: *See—*
Komiya, Takao; Tosaka, Umi; Ihara, Takashi; Matsuo, Takehiko; and Ohara, Katsunobu, 3,794,539.

Matsushita Electric Industrial Co., Ltd.: *See—*
Dezaki, Yoshito, 3,794,985.
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Matsushita Electric Works, Ltd.: *See—*
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Mattel, Inc.: *See—*
Buck, Gordon H.; Northrop, John H.; and Willis, Don C., 3,794,330.
Moquin, Leonard R.; and Sapkus, Jurgis, 3,793,766.

Matteson, William M. Adjustable arch support for a shoe. 3,794,037, Cl. 128-597.000.

Matthews, Robert M.; and Petty, Albert W., to Kellwood Company. Process for preparing ladies' seamless pantyhose. 3,793,649, Cl. 2-224.00r.

Matuda, Totomu; Inoue, Hiroo; and Takagi, Makoto, to Nippon Air Brake Co., Ltd. Pressure control device for remote control of marine engine. 3,794,293, Cl. 251-130.000.

Matusch, Siegfried: *See—*
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Mauldin, William E., to Hi-Lo Powered Stirrups, Inc. Hoisting mechanism for ascending and descending a cable. 3,794,298, Cl. 254-185.00r.

Maurya, Ramamurat R.: *See—*
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MCA Disco-Vision, Inc.: *See—*
Elliott, James E., 3,794,410.

McAllister, Robert L., to American Air Filter Company, Inc. Pleated filter assembly. 3,793,813, Cl. 55-481.000.

McCarty, William J., to General Electric Company. Wide dispersion fan impeller. 3,794,443, Cl. 416-175.000.

McCord, Andrew T.: *See—*
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McCormick, Harold E.: *See—*
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McCormick, James B.; Mijanovich, Radoslav T.; and Ohba, Shunjiro, to Pelam, Inc. Data acquisition device. 3,794,982, Cl. 340-172.500.

McCulloch Corporation: *See—*
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McDonnell Douglas Corporation: *See—*
Burnhard, Fort; Lee, Thomas G.; and Schuster, John R., 3,793,861.

McDowell, Donald J.: *See—*
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McDowell-Wellman Engineering Company: *See—*
Cheek, Edward E.; and Sabin, Raymond H., 3,793,964.

McElroy, Jerry T.; and Posakony, Gerald J., to Automation Industries, Inc. Ultrasonic search unit construction. 3,794,866, Cl. 310-8.200.

McGill, H. T., Inc.: *See—*
Griffin, Charles D.; Young, Murray L.; and Griffin, James E., 3,793,763.

McGinnis, Gerald E., to Lanz Medical Products Company. Endotracheal tube with inflatable cuff and check valve. 3,794,043, Cl. 128-349.0bv.

McGraw-Edison Company: *See—*
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McGuire, Michael E.: *See—*
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McKenry, Robert J., to Kennametal Inc. Tamper foot. 3,793,960, Cl. 104-10.000.

McKinley, Richard Eugene, to Honeywell Inc. Recording system having digital control for controlling recording medium movement. 3,795,013, Cl. 346-136.000.

McLeod, Willard W., Jr.: *See—*
Pearson, Karl C., Jr.; Postema, Gerrit B.; McLeod, Willard W., Jr.; and Fenzel, Frederick A., 3,794,998.

McMahon, Robert F., to International Business Machines Corporation. Microprogrammed control unit with means for reversing and complementing microinstructions. 3,794,979, Cl. 340-172.500.

McMath, Connie W., to United Aircraft Corporation. Seal centering and retention means. 3,794,244, Cl. 239-265.410.

McMurtry, David Roberts, to Rolls-Royce (1971) Limited. Liquid dispensing devices. 3,794,440, Cl. 415-88.000.

McMurtry, David Roberts, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's, Government of the. Variable pitch rotary blading. 3,794,442, Cl. 416-145.000.

McNeill, Frank M., to Tee-Pak, Inc. Method of winding tubular films or webs. 3,794,267, Cl. 242-55.000.

McNeill, Frank M., to Tee-Pak, Inc. Method of winding tubular films or webs. 3,794,268, Cl. 242-55.000.

McPhee, Charels J., to American Hospital Supply Corporation. Defoaming device for medical humidifier. 3,793,810, Cl. 55-255.000.

McVey, Charles W., to Addressograph-Multigraph Corporation. Sequential hammer imprinter. 3,793,947, Cl. 101-93.0mn.

McVickar, Dan B.; and Wolf, Adolf, to Lear Siegler Inc. Hot-air furnace. 3,794,014, Cl. 126-110.0aa.

Mead Corporation, The: *See—*
Stout, James T., 3,794,210.

Mears, Robert A.: *See—*
Diaz, Juan C.; and Mears, Robert A., 3,794,698.

Meckel, Walter; and Muller, Erwin, to Bayer Aktiengesellschaft. Polyurethane elastomers prepared from diamino-benzoic acid esters. 3,794,621, Cl. 260-75.0nh.

Med General, Inc.: *See—*
Ersek, Robert A.; Wall, Donald E.; and Garity, Michael C., 3,794,091.

Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich. Mould for electoslag remelting furnace. 3,794,104, Cl. 164-252.000.

Meek, James M.; Ravilious, Clarence F.; and Heinard, Whilden G., to United States of America, Army. Schwarzschild radar antenna with a unidirectional turnstile scanner. 3,795,003, Cl. 343-754.000.

Meek, James M.; Ravilious, Clarence F.; and Heinard, Whilden G., to United States of America, Army. Cassegrain radar antenna with selectable acquisition and track modes. 3,795,004, Cl. 343-761.000.

Meenan Corporation: *See—*
Meenan, Cyril P., 3,794,459.

Meenan, Cyril P., to Meenan Corporation. Furnace exhaust treatment system. 3,794,459, Cl. 431-5.000.

Megdall, Sanford B. Combined tissue box and toilet paper roll holder. 3,794,253, Cl. 242-55.200.

Megens, Hendrikus Johannes Josephus, to U.S. Philips Corporation. Method of manufacturing a profiled grinding wheel. 3,794,474, Cl. 51-295.000.

Megens, Ludovious: *See—*
Van Rijsewijk, Henri Carel Haverkorn; Megens, Ludovious; and Oskam, Gerard-Hendrik, 3,793,720.

Mehalchick, Emil J.; and Mathers, James E., to GTE Sylvania Incorporated. Method of increasing brightness of Y202S:EU luminescent material. 3,794,597, Cl. 252-301.40s.

Meier, Otto H.; and Tassie, Douglas P., to General Electric Company. Sprocket assembly. 3,793,921, Cl. 89-33.0ca.

Melngailis, Ivars: *See—*
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Mercier, Jacques J. Pressure vessel. 3,794,078, Cl. 138-30.000.

Merck & Co., Inc.: *See—*
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Sletzinger, Meyer; Karady, Sandor; and Ly, Manuel G., 3,794,681.

Merlin Gerin, Societe Anonyme: *See—*
Terracol, Claude, 3,794,945.

Merola, Anthony, to Amerola Products Corporation. Method of finishing metal ball-bat. 3,793,699, Cl. 29-415.000.

Merrill, John J., to Chevron Research Company. Gas desulfurization. 3,794,710, Cl. 423-220.000.

Merrill, Marcellus S. Method and apparatus for determining caster trail. 3,793,734, Cl. 33-203.120.

Merritt, Gary C.: *See—*
Kemmerly, Richard C.; Kaner, Gary M.; and Merritt, Gary C., 3,794,774.

Mertz, Edward H., to General Motors Corporation. Seat back angle adjuster and latch. 3,794,380, Cl. 297-379.000.

Messinger, Werner; Zimmermann, Klaus; and Seiffert, Florian, to Braun Aktiengesellschaft. Dryshaver with an adjustable protectile sleeve. 3,793,724, Cl. 30-41.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Hardt, Lothar, 3,793,802.
Steuernagel, Walter, 3,793,804.

Metil, Ignatius, to Ameron, Inc. Chemical resistant epoxy compositions capable of room temperature curing. 3,794,609, Cl. 260-30.4ep.

Metzger, Lenard M., to Eastman Kodak Company. Blanking method and apparatus for video film recorder. 3,794,755, Cl. 178-5.4cd.

Mewhinney, Albert B., to General Motors Corporation. Hydropneumatic energy absorbing unit. 3,794,310, Cl. 267-139.000.

Meyer, Frank G.; and Tesitor, Charles N., to United States of America, Atomic Energy Commission. Continuous plutonium dissolution apparatus. 3,794,470, Cl. 23-277.60s.

Meyer, Jeffry R.: *See—*
Spindle, Harvey E.; Meyer, Jeffry R.; and Hess, Robert L., 3,794,799.

Meyer, Robert F.; and Stratton, Charlotte D., to Park, Davis & Company. α-Aminomethyl-2-quinolineethanols,-aminomethyl-1-isoquinolineethanols, α aminomethyl-6-phenanthridineethanols and their ketonic analogues. 3,794,650, Cl. 260-286.00a.

Michael, Harold J., to Rockwell International Corporation. Coated composite metal part. 3,794,514, Cl. 117-46.0fs.

Michalik, Edmund R.; and Gorman, Harold R., to PPG Industries, Inc. Method for thermally tempering glass sheet by liquid quenching. 3,794,476, Cl. 65-116.000.

Michalski, Raymond J.: *See—*
Macaluso, Russell A.; and Michalski, Raymond J., 3,794,472.

Mickler, Brian E., to Schlumberger Technology Corporation. Methods and apparatus for acoustically investigating earth formations using shear waves. 3,794,976, Cl. 340-15.5bh.

Midland-Ross Corporation: *See—*
Swanson, Kenneth D., 3,793,829.

Midwestern Industries, Inc.: *See—*
Riesbeck, Laverne J.; and Blackwell, Willis A., 3,794,165.

Mijanovich, Radoslav T.: *See—*
McCormick, James B.; Mijanovich, Radoslav T.; and Ohba, Shunjiro, 3,794,982.

Mikotin, Evgeny Emelyanovich: *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Evgeny Emelyanovich; Nikolaenko, Evgeny Gigorievich; Stepnov, Alexandr Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,794,106.

Miller, Alfred E.: *See—*
Check, Mathias M., 3,794,212.

Miller, Francis G.; and Irons, Stanton D., to Bethlehem Steel Corporation. Heavy medium beneficiating process. 3,794,162, Cl. 209-172.500.

Miller, Marvin A. Combined billiard ball rack and shoe assembly. 3,794,319, Cl. 273-22.000.

Miller, Stanley J., to National Can Corporation. Method and apparatus for feeding a sheet metal web. 3,793,972, Cl. 113-113.000.

Miller, Warren K.: *See—*
Adams, Thomas H.; and Miller, Warren K., 3,794,467.

Milovancevic, Slavko. Pulsating timer. 3,794,857, Cl. 307-293.000.

Milroy, Richard A. Negator-spring, rolling-tape, flow-control, quiet throttling valve. 3,794,068, Cl. 137-497.000.

Mine Safety Appliances Company: *See—*
Cotabish, Harry N.; Wise, Layton A.; and Buban, Elmer E., 3,794,030.
Temple, Ernest E.; and Giebel, Joseph L., 3,793,978.

Minnesota Mining & Manufacturing Company: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
Flor, Lawrence A.; and Hoyne, Earl K., 3,794,419.
Thielen, James E., 3,793,665.

Mishcon, Lester; and Reagan, Donald W., to Singer Company, The. Wheel-feeding cam for circular knitting machines. 3,793,853, Cl. 66-50.00a.

Misomex Aktiebolag: *See—*
Luther, Harald Johan, 3,794,486.

Mitchell, James G.: *See—*
Mitchell, Winalee; and Mitchell, James G., 3,793,746.

Mitchell, Robert M.: *See—*
Cates, Robert E.; and Mitchell, Robert M., 3,794,304.

Mitchell, Winalee; and Mitchell, James G. Slippers. 3,793,746, Cl. 36-2.50r.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Iwata, Tokushige; Hojyo, Nobuyoshi; Ando, Tokushi; and Miwa, Masao, 3,793,873.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Atsukawa, Masumi; Kamei, Kazumi; Furumoto, Toshihiko; and Tsuneyoshi, Nikushi, 3,794,714.

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Mitsui Shipbuilding and Engineering Company: *See—*
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Miwa, Masao: *See—*
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Miyamoto, Kimio: *See—*
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Miyanohara, Isao: *See—*
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Miyatuka, Hajime, to Fuji Photo Film Co., Ltd. Method of preparing compound oxides of titanium and zinc. 3,794,717, Cl. 423-598.000.

Mizoguchi, Sutemarj. Boring head with axial adjustment means. 3,794,437, Cl. 408-146.000.

Mizuguchi, Toru; Fujita, Mitsuo; and Suzuki, Yoshika, to Furukawa Electric Company Limited, The and Toko Kogyo Kabushiki Kaisha. Cover plate for covering the outer periphery of a wire reel. 3,794,209, Cl. 220-72.000.

Mizuno, Katsumi: *See—*
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Mizutani, Isao: *See—*
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Mobil Oil Corporation: *See—*
Commisso, Nicholas D., 3,794,090.
Liddy, Clarence, 3,794,585.
Lucas, Paul Adrian, 3,794,545.
Strange, Lloyd K., 3,794,113.

Mobile Drilling Company, Inc.: *See—*
Davis, Henry E., 3,794,127.

Mochizuki, Yoshinari, to Hope Kabushiki Kaisha. Ski boot. 3,793,747, Cl. 36-2.5al.

Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., to United States of America, Agriculture. Hexachlorocyclopentadines adducts of unsaturated amides. 3,794,640, Cl. 260-247.70h.

Moe, Walter, to Aurora Products Corporation. Target game with swingable mounted projecting ball. 3,794,324, Cl. 273-101.000.

Moertel, George B., to Textron, Inc. Slider for slide fastener. 3,793,684, Cl. 24-205.140.

Mohr, Glenn R., to Continental Can Company, Inc. Induction heating coil. 3,794,802, Cl. 219-10.790.

Mohrman, James A.; and Sanford, Howard A., to Telmar, Inc. Recorder with chart location reference means. 3,795,007, Cl. 346-32.000.

Molins, Desmond Walter; and Rowlands, Tom, to Molins Limited. Wrapping rod-like smoking articles. 3,794,048, Cl. 131-94.000.

Molins Limited: *See—*
Molins, Desmond Walter; and Rowlands, Tom, 3,794,048.

Moll, Hans: *See—*
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Momoi Fishing Net Manufacturing Co., Ltd.: *See—*
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Monahan, Jack J.; and Schneider, Fred J., to Western Electric Company, Incorporated. Methods of bonding a beam-lead device to a substrate. 3,793,710, Cl. 29-577.000.

Monsanto Company: *See—*
Gash, Virgil W.; and Bissing, Donald E., 3,794,679.
Latinen, George A., 3,794,471.

Monser, George J.; and Ehrhardt, John R., to Raytheon Company. Broad band spiral antenna. 3,795,005, Cl. 343-895.000.

Monson, Charles D., to Invention Engineering, Inc. Pickup truck hoist support. 3,794,192, Cl. 214-75.00h.

Montgomery, John: *See—*
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Moon, Calvin W., to United States of America, Air Force. Nuclear engine reactor rocket cores. 3,793,832, Cl. 60-203.000.

Moon, Robert W., to Lakeside Manufacturing Inc. Self-propelled wheelchair. 3,794,132, Cl. 180-13.000.

Mooney, John J.; Marshman, Frank E.; and Donlon, Richard H., to Transportation Technology, Inc. Transportation system and vehicle therefor. 3,793,963, Cl. 104-130.000.

Mooney, Thomas; and Bauer, Richard A., to Electrical Fittings Corporation. Raintight connector for electrical conduit. 3,794,362, Cl. 285-340.000.

Moore, Harold Edward, to McCulloch Corporation. Chain saw safety method and apparatus. 3,793,727, Cl. 30-383.000.

Moore, Larry R.; and Turek, Robert F., to Bowles Fluidics Corporation. Techniques for bi-directional fluid signal transmission. 3,794,055, Cl. 137-1.000.

Moorhead, Terence Francis. Hair populated material. 3,794,933, Cl. 132-5.000.

Moquin, Leonard R.; and Sapkus, Jurgis, to Mattel, Inc. Telephone-talking figure toy simulator. 3,793,766, Cl. 46-232.000.

Morex, Inc.: *See—*
Morrill, Vaughan, Jr., 3,794,944.

Morgan, Robert E.: *See—*
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Morgan, Victor B.: *See—*
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Moriki, Juichi, to Matsushita Electric Industrial Co., Ltd. Horizontal synchronizing device for television receivers. 3,794,760, Cl. 178-69.5tv.

Morioka, Takeshi: *See—*
Sugiura, Shinzo; and Morioka, Takeshi, 3,794,133.

Morrill, Vaughan, Jr., to Morex, Inc. Reed switches and process for making them. 3,794,944, Cl. 335-154.000.

Morris, James Allen: *See—*
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Morrison, Robert W.: *See—*
Birch, Philip L.; and Morrison, Robert W., 3,794,001.

Morse, Glenn B. Positioning coupling for a table bracket. 3,794,089, Cl. 144-1.00c.

Moser, Joseph M.: *See—*
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Mosler Safe Company, The: *See—*
Spetz, William L., 3,794,813.

Mott, George E.; and Wilbourn, James P., to Texaco Inc. Mobile, arctic drilling and production platform. 3,793,840, Cl. 61-46.500.

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Mueller, Harry B.; and Reid, Gilbert R., to Burroughs Corporation. Stripping insulated wire. 3,794,522, Cl. 134-1.000.

Mueller, Louis E., to Mac-Fab Products, Inc. Method of making collar. 3,793,971, Cl. 113-1.00g.

Mueller, Richard J.: *See—*
Pitel, Irving; and Mueller, Richard J., 3,794,219.

Mueller, Robert C.; and Griffin, Amos C. Method for injecting chemicals into the papilla for depilation. 3,794,028, Cl. 128-216.000.

Mueller, Rolf K.; and Lohmann, Adolf W., to Bendix Corporation, The. Holographic spectrometer. 3,794,426, Cl. 356-98.000.

Muijs, Cornelis Gerardus, to Sperry Rand Corporation. Header crop divided for an exial flow combine having side-by-side axial flow units. 3,794,046, Cl. 130-27.00t.

Mulder, Hendrik; and Houtkamp, Johannes Jacobus, to N.V. Optische Industrie "De Ouda Delft". Image transformer tube with movable phosphor screen. 3,794,874, Cl. 313-102.000.

Mullan, Noel A.; and Overell, Brian G., to Beecham Group Limited. Protein allergenic extracts reacted with dialdehydes. 3,794,630, Cl. 260-112.00r.

Muller, Anton, to Eisen- und Drahtwerk Erlau Aktinegesellschaft. Web link for tire anti-skid chains. 3,794,096, Cl. 152-243.000.

Muller, Elmar: *See—*
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Muller, Erwin: *See—*
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Muller, Herbert Ewald: *See—*
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Muller, Robert; and Sommerer, Karl, to Porsche, Dr.-Ing., H.c.F., K.G., Firma. Shifting mechanism for automatic transmissions of vehicles. 3,793,901, Cl. 74-473.00r.

Multifastener Corporation: *See—*
Ladouceur, Harold A., 3,793,658.

Multiscreen Corporation Limited: *See—*
Jones, Peter Ronald Wright, 3,794,415.

Munchel, Carl J. Elevated spray device. 3,794,217, Cl. 222-174.000.

Munsey, Robert J., to Westinghouse Electric Corporation. Wall panel lateral support assembly and locking mechanism therefor. 3,794,281, Cl. 248-188.000.

Munz, Emil: *See—*
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Murakami, Yuetsu: *See—*
Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, 3,794,530.

Murayama, Naghiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pyroelectric element of polymer film. 3,794,986, Cl. 340-173.0ch.

Murayama, Naohiro; and Fukuda, Makoto, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing high-quality electrets. 3,793,715, Cl. 29-592.000.

Muska, Willis Martin, to Bell Telephone Laboratories, Incorporated. Dielectric circuit forming process. 3,794,536, Cl. 156-11.000.

Musschoot, Albert. Vibratory casting tumbling apparatus. 3,793,780, Cl. 51-14.000.

Myers, Donald W. Aggregate dryer. 3,793,745, Cl. 34-189.000.

Myers, Douglas T. Mail delivery signal device. 3,794,240, Cl. 232-35.000.

Nabekawa, Shukichi: *See—*
Imamura, Kennosuke; Nabekawa, Shukichi; Otsubo, Itaru; and Kasuya, Hisashi, 3,794,702.

Nadrich, John; and Ericson, John A. Ingot mold and hot top therefor. 3,794,262, Cl. 249-106.000.

Nagao, Shinsuke: *See—*
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Nagashima, Toshio: *See—*
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Naher, Gotthilf: *See—*
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Neimann, Gunter; and Thum, Waldemar, 3,794,562.

Naito, Shun-Ichi. Aminoethanesulfonyl derivatives. 3,794,652, Cl. 260-293.690.

Najer, Henry; and Giudicelli, Jean-Francois, to Synthelabo. 2-(3-trifluoromethylthio-aniline-nicotinic acid esters thereof and phar-

maceutically acceptable inorganic or basic salts thereof. 3,794,657, Cl. 260p294.80g.

Nakagawa, Akira: *See—*
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Nakagawa, Hideyuki: *See—*
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Nakamura, Hiroshi: *See—*
Inoue, Takasi; Nagao, Shinsuke; and Nakamura, Hiroshi, 3,793,697.

Nakamura, Kenya; and Fukuma, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Torque transmission device. 3,793,907, Cl. 74-798.000.

Nakamura, Matsuaki: *See—*
Akashi, Goro; Fujiyama, Masaaki; Kasuga, Akira; Yamada, Yasuyuki; Suzuki, Osamu; Nakamura, Matsuaki; Sega, Kenji; and Kato, Kiroshi, 3,794,519.

Nakano, Michiyo, to Matsushita Electric Industrial Co., Ltd. Leakage preventing microwave oven. 3,794,797, Cl. 219-10.550.

Nalco Chemical Company: *See—*
Macaluso, Russell A.; and Michalski, Raymond J., 3,794,472.

Nara, Kaoru: *See—*
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Narda Microwave Corporation, The: *See—*
Aslan, Edward E., 3,794,914.

Nash, Dudley O., to General Electric Company. Augmenter fuel injection mounting system. 3,793,838, Cl. 60-261.000.

Nasvytis, Algirdas L. Variable speed friction drive. 3,793,910, Cl. 74-796.000.

National Can Corporation: *See—*
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National Petro Chemicals Corporation: *See—*
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Aboutboul, Henri A.; Krekeler, Jerome H.; and Kirch, William, 3,794,713.

National Petro-Chemicals Corporation, mesne: *See—*
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National Research Development Corporation: *See—*
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Ling, Robin Sydney Mackwood; and Lee, Alan John Clive, 3,793,650.

Nationale Research Development Corporation: *See—*
Stark, Donald Sutherland, 3,794,875.

Nawracaj, Edward P.; and Greit, Henry. Dual oscillator variable pulse duration electrotherapeutic device. 3,794,022, Cl. 128-422.000.

Neal, David Lynn: *See—*
Smith, Lawrence Edward; and Neal, David Lynn, 3,794,877.

Neff, Joseph J., to Bell & Howell Company. Azimuth adjustment particularly for magnetic heads. 3,794,769, Cl. 360-109.000.

Nehezvegyipari Kutato Intezet: *See—*
Gorog, Katalin, nee Privitizer; Bruckner, Gyorgyi; Farkas, Kalman; Grega, Erzsebet; Marosvolgyi, Sandor; Pinter, Zoltan; and Szilagyi, Gyula, 3,794,641.

Neimann, Gunter: *See—*
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Neimann, Gunter; and Thum, Waldemar, 3,794,562.

Nelson, Arthur John. Apparatus and method of maneuver and sustain. 3,794,125, Cl. 175-6.000.

Nelson, Robert C. Dual rope clamp. 3,793,682, Cl. 24-134.00p.

Nemit, Jeffrey T., to International Telephone and Telegraph Corporation. Wide-angle planar-beam antenna adapted for conventional or doppler scan using dielectric lens. 3,795,002, Cl. 343-754.000.

Nerwin, Hubert, to Eastman Kodak Company. Photographic diffusion transfer film unit with disposable pod and trap. 3,794,490, Cl. 96-76.00c.

Netting, David I., to Philadelphia Quartz Company. Hollow spheres consisting of alkali metal silicate and a polysalt. 3,794,503, Cl. 106-288.00b.

Neubert, Fred J.: *See—*
France, Jimmie J.; Neubert, Fred J.; Caldwell, Eugene L.; Springer, Howard D.; and Sutton, Max E., 3,794,383.

Neumann, Richard; and Heidenmann, Rolf, to Windmoller & Holscher. Printing mechanism for intaglio and flexographic printing. 3,793,952, Cl. 101-157.000.

Neumer, John F., to Du Pont de Nemours, E. I., and Company. Dyeing water swellable cellulosic materials with borates in a glycol dye solution. 3,794,463, Cl. 8-21.00c.

Neumunstersche Maschinen- und Apparatebau Gesellschaft m.b.H.: *See—*
Bauch, Ernst, 3,794,118.

Newell, Stephen D., to Alco Standard Corporation. Counterweighted towel irrigator. 3,794,064, Cl. 137-615.000.

Newgarden, Joseph E., Jr. Ball projecting device with spin producing mechanism. 3,794,011, Cl. 124-1.000.

Newson, Brian George; and Tombs, Michael Peter, to Lever Brothers Company. Extraction of protein from seed. 3,794,735, Cl. 426-364.000.

Nicholson, Robert H.: *See—*
Finley, Ronald K.; Langlois, Donald J.; Nicholson, Robert H.; and Porter, Herschel F., 3,794,746.

Nick, Howard H., to International Business Machines Corporation. Multi-terminal communication apparatus controller. 3,794,759, Cl. 178-6.800.

Nickols, Chester R.: *See—*
Horvath, John F.; and Nickols, Chester R., 3,794,061.

Niebylski, Leonard M.; Jarema, Chester P.; and Immethun, Peter A., to Ethyl Corporation. Metal foams and process therefor. 3,794,481, Cl. 75-20.00f.

Niedrach, Leonard W.; and Grubb, Willard T., to General Electric Company. Oxygen sensor. 3,794,575, Cl. 204-195.00p.

Nikolaenko, Evgeny Gigorievich: *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Evgeny Emelyanovich; Nikolaenko, Evgeny Gigorievich; Stepnov, Alexandr Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,794,106.

Ninke, Donald A.; and La Hay, James F., to Sherwood Medical Industries, Inc. Iontophoresis and conductivity analysis circuit. 3,794,910, Cl. 324-30.00r.

Nippon Air Brake Co., Ltd.: *See—*
Matuda, Totomu; Inoue, Hiroo; and Takagi, Makoto, 3,794,293.

Nippon Chemical Industrial Co., Ltd.: *See—*
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Nippon Electric Company, Limited: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Oil Co., Ltd.: *See—*
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Nippon Piston Ring Co., Ltd.: *See—*
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Nippon Telegraph and Telephone Public Corporation: *See—*
Tabiichi, Yukio; Yamazaki, Yuichi; and Sato, Yoshiharu, 3,794,770.

Nippon Zeon Co. Ltd.: *See—*
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Nippon-Kokan Kabushiki Kaisha: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nisbet, John L.; and Woodall, Hubert C., Jr., to Carolina Narrow Fabric Company. Method of forming glass fabric suitable for casts, bandages, and the like. 3,793,686, Cl. 28-75.00r.

Nishibu, Masami: *See—*
Iwatsuji, Kazuhito; Nishibu, Masami; and Toshioka, Tohro, 3,794,997.

Nishikata, Goro, to Yehan Numata. Zero adjusting device for digital micrometer, 3,793,733, Cl. 33-166.000.

Nishimura, Hideo; Kanou, Kimio; and Ishigaki, Tamotsu. Backlash compensating apparatus for numerically controlled machine tool. 3,794,902, Cl. 318-630.000.

Nishimura, Shigeru, to Matsushita Electric Industrial Co., Ltd. Color pick-up device. 3,794,407, Cl. 350-171.000.

Niskin, Shall J. Thermometer reversing apparatus. 3,793,889, Cl. 73-425.40r.

Nissen, Stanley M.: *See—*
Deerfield, Alan J.; and Nissen, Stanley M., 3,794,984.

Nittel, Fritz: *See—*
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Nogueira, Andrew; and Packer, Harry J., to Chemed Corporation. Stripping method. 3,794,524, Cl. 134-31.000.

Noll, Klaus-Reinhold: *See—*
Pieper, Helmut; Kruger, Gerd; Noll, Klaus-Reinhold; Keck, Johannes; and Kahling, Joachim, 3,794,645.

Nordgren, Lennart John, to U.S. Philips Corporation. Switching arrangement for electrical fuses. 3,793,956, Cl. 102-70.200.

Nordson Corporation: *See—*
Tamny, Simon Z.; Hastings, Donald R.; and Wilhelm, Frederick R., 3,794,243.

Norkaitis, Anthony B. Apparatus for use in rebuilding electromagnetic units. 3,793,694, Cl. 29-205.00r.

North American Rockwell Corporation: *See—*
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Northrop, John H.: *See—*
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Norton Company: *See—*
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Noskov, Felix Pavlovich: *See—*
Tarasenko, Leonid Grigorievich; Kuperman, Abram Yakovlevich; Noskov, Felix Pavlovich; Derevyagina, Irina Sergeevna; Malkus, Boris Lvovich; Bernshtein, Naum Davydovich; Alexeev, Anatoly Anatolievich; and Vishnyakov, Anatoly Nikolaevich, 3,794,254.

Nowak, Edmund, to Przedsiebiorstwo Doswiadczalne Pras Automatycznych i Tlocznikow "Por ar-Hydomat". Hydraulic press with box- and column-type frame. 3,793,945, Cl. 100-257.000.
Noxxe, Inc.: *See—*
Stephens, William J., 3,794,085.
Numicon, Inc.: *See—*
Price, Robert B.; and Hosterman, Richard N., 3,793,896.
Nussbaum, Manfred: *See—*
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Nutron Corporation: *See—*
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N.V. Hollandse Signaalapparaten: *See—*
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N.V. Optische Industrie "De Ouda Delft": *See—*
Mulder, Hendrik; and Houtkamp, Johannes Jacobus, 3,794,874.
N.V. Optische Industrie de Oude Delft: *See—*
Klem, Adrianus; and Vlasbioem, Hugo, 3,794,837.
Nyboer, Robert P. Gripping device assembly for tensioned pliable elongate member. 3,793,729, Cl. 32-23.000.
Nyce, Jack Leland: *See—*
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Nye, John David, to Ferrox Iron Ltd. Process for producing hard ferrites. 3,794,720, Cl. 423-594.000.
Oakes, Martin: *See—*
Degenkolb, Robert Stephen; Allington, Trevor Richard; Wang, Yin Huai; and Oakes, Martin, 3,793,717.
Obayashi, Noburaru, to Kabushiki Kaisha Karial Gakki Seisakusho Haniatsu-shi. Electronic musical instrument. 3,794,747, Cl. 84-1.010.
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Mains, Harold Eugene; O'Brien, William Leo; Oehlschlaeger, H. Fred; Sharkey, Hubert Joseph; and Vatl, Robert Elwood, Jr., 3,794,617.
O'Connor, Daniel G., to Singer Company, The. Realtime computer operation. 3,794,981, Cl. 340-172.500.
Odegaar, Gunnar Viggo: *See—*
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Olgard, Gunnar; Forsell, Bo; and Uddstrand, Bengt, to Rederiaktiebolaget Nordstjernan Nyna. Method and apparatus for supplying and controlling flow of a liquid suspension through laminar apparatus. 3,794,167, Cl. 210-84.000.
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Oliver, Brian H.; and Custer, Harry S., to Goodyear Tire & Rubber Company, The. Flexible cover for an electrolytic cell. 3,794,577, Cl. 204-219.000.
Oliver, John L. Foot rest for road vehicle. 3,794,353, Cl. 280-291.000.
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Olson, Herbert Oliver, to Olson Paddle Brooms (1972) Ltd. Curling broom. 3,793,668, Cl. 15-210.00r.
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O'Neal, Cleveland, Jr.; and Goetz, Joseph A., to Sherwin Williams Company, The. ZN-benzotiazole-H2S04 corrosion-inhibitor. 3,794,603, Cl. 252-389.00r.
O'Neill, John Sidney; and Silverstone, Calvin Eric, to United Kingdom Atomic Energy Authority. Production of refractory artefacts. 3,794,707, Cl. 264-56.000.
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Osterhaus, Joseph C., to Lilly, Eli, and Company. Powder compacting apparatus for use with a mechanism for automatically measuring and dispensing unit quantities of dry powder. 3,794,215, Cl. 222-1.000.
Oswald, Thomas L., to Gould Inc. Battery terminal leak detector. 3,793,876, Cl. 73-46.000.
Ota, Kiichi. Carding engine provided with a rotary type web stripping device. 3,793,680, Cl. 19-106.00r.
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Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, to Rohm & Haas Company. Stabilization of unsaturated acids by distillation with a combined polymerization inhibitor. 3,794,567, Cl. 203-8.000.
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Pagano, Joseph F., to Smithkline Corporation. Complexes of phosphonilic acid and 9-amino-3-nitroacridine useful as antifungal or antibacterial agents. 3,794,723, Cl. 424-200.000.
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Perreault, Jules, to Bomrardier Limited. Lubrication system for variable speed drive pulley. 3,794,142, Cl. 184-6.500.
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Petri, Nello J. Collator and web feed control means for the same. 3,794,232, Cl. 226-50.000.
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Pratt, John MacDonald; and Whitear, Brian Ronald David, to Imperial Chemical Industries Limited and Ilford Limited. Photographic element comprising an olefinically unsaturated monomer and a photolabile organo cobalt compound. 3,794,497, Cl. 96-115.00p.
Preston, Frank S., to United Aircraft Corporation. Semiconductive encoder. 3,794,892, Cl. 317-235.00r.
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Rhee, Dong Woo, to GTE Sylvania Incorporated. Non-saturating oscillator and modulator circuit. 3,794,934, Cl. 332-16.00t.
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Ridders, Johannes Antonius Maria; Van Der Wolf, Rein Willemse; and Mollet, Adrianus Josephus Theresia. Apparatus for introducing a substance into a discharge tube or electric lamp. 3,794,403, Cl. 316-30.000.
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Riesbeck, Laverne J.; and Blackwell, Willis A., to Midwestern Industries, Inc. Motion control for a material separator. 3,794,165, Cl. 209-325.000.
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Rohrer, Dennis L. Snow conditioning machine. 3,794,122, Cl. 172-66.000.
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Rosewald, Gary W., to Cities Service Oil Company. Cell for collecting and mixing fluids. 3,793,888, Cl. 73-421.00r.
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Sahin, Kenan E. Communication method and network system. 3,794,983, Cl. 340-172.500.
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Schafer, Augustin, to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung. Method of and apparatus for regulating the speed of ring or spindle rails associated with textile machines. 3,793,821, Cl. 57-9.500.
Schatz, Martin L., 20% to Lee, Raymond, Organization, Inc., The. Bouncing toy rocket. 3,793,765, Cl. 46-74.00a.
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Schissler, Walter J., to Borg-Warner Corporation. Method of making flat clutch plates. 3,794,541, Cl. 156-228.000.
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Sell, James F. Boat ladder. 3,794,140, Cl. 182-92.000.
Semin-Vadov, Gennady Mikhailovich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,794,104.
Seo, Yoshio, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Blast furnace cooling system. 3,794,307, Cl. 266-32.000.
Servos, Gerald H. Automatic velocity component selector for electronysiagmographs. 3,794,017, Cl. 128-2.10r.
Serwetman, Richard: *See—*
Henn, William; and Serwetman, Richard, 3,794,974.
Sethi, Bal Krishan: *See—*
Lahtvee, Toivo; Sethi, Bal Krishan; and Stark, William Hubbard, 3,794,718.
Severijns, Adrianus Petrus, to U.S. Philips Corporation. Heat exchanger and method of manufacturing the same. 3,794,110, Cl. 165-164.000.
Severin, Petrus Johannes Wilhelmus; Poodt, Gerardus Johannes Maria; and Vermeulen, Gerard, to U.S. Philips Corporation. Contact device using conductive fluid for measuring resistance and capacitance of semiconductor. 3,794,912, Cl. 324-62.000.
Sexton, James P., 1/2 to Bevlaqur, Peter J. Crowning die. 3,793,800, Cl. 53-341.000.
Shaburov, Fedor Fedorovich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,794,104.
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Sheckells, Amuel E., to International Steel Company. Collapsing mechanism for revolving door wings. 3,793,773, Cl. 49-44.000.
Sheffield, Wilbur L., to Dennison Manufacturing Company. Embosser having cooperating endless indicia carriers displaceable relative to one another. 3,793,946, Cl. 101-18.000.
Shelestak, John, to PPG Industries, Inc. Apparatus for marking flat glass. 3,793,983, Cl. 118-7.000.
Shell, Irving W. Coupling assembly. 3,794,282, Cl. 248-244.000.
Shell Oil Company: *See—*
Dautzenberg, Frits M.; and Kouwenwoven, Herman W., 3,794,599.
Ladeur, Peter, 3,794,580.
Schlaffer, Walter G., 3,794,598.
Schutt, Hans U., 3,794,600.
Smith, Vigo N.; and Bowers, Richard C., 3,794,425.
Shellhause, Ronald L., to General Motors Corporation. Boot and control mechanism. 3,794,147, Cl. 192-3.00g.
Sheran, Carl P., to Du Pont de Nemours, E. I., and Company. Process for making a conductive-mix electrical initiator. 3,793,920, Cl. 86-1.00r.
Sherman, Peter M., to Hydrodynamic Development Corporation. Marine propulstion system. 3,793,980, Cl. 115-39.000.
Sherman, Roger M., to Lockwood Corporation. Valve construction for irrigation systems. 3,794,248, Cl. 239-533.000.
Sherman, Roger M. Adjustable valve for use on irrigation pipes. 3,794,294, Cl. 251-145.000.
Sherwin Williams Company, The: *See—*
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Ninke, Donald A.; and La Hay, James F., 3,794,910.
Shibata, Hideo; Emori, Takashi; Kurasawa, Kazuo; Okabe, Masao; and Santo, Tamio, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Hamamatsu Terebi Kabushiki Kaisha. Optical profile detector whose function is not adversely affected by surface conditions f strip-shaped member. 3,794,427, Cl. 356-120.000.
Shida, Seiya: *See—*
Tsuchiya, Toru; and Shida, Seiya, 3,794,935.
Shidaker, Clyde L.; and Manning, Joseph H. Trailer and mobile home anchoring device. 3,793,787, Cl. 52-163.000.
Shields, Robert G.; Blower, Warren A.; and Hatch, Edmond K., to Sherwin-Williams Company, The. Matchplate molding machine. 3,794,103, Cl. 164-182.000.
Shinskey, Francis G., to Foxboro Company, The. Adaptive non-linear control system. 3,794,817, Cl. 235-150.100.
Shirasaka, Yoshihiro: *See—*
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Shirek, Lawrence J.: *See—*
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Shirota, Minoru; Fukada, Tetsuo; Ogata, Mayumi; and Yamada, Hiromi, to Kabushiki Kaisha Yakult Honsha and Hiromi Yamada. Artificial feed for domestic silkworms. 3,794,499, Cl. 426-72.000.
Shockey, Donald A.; and Curran, Donald R., to Stanford Research Institute. Method for determining fracture toughness using small specimens. 3,793,874, Cl. 73-12.000.
Shuh, Lewis M.: *See—*
Keating, Raymond J.; Shuh, Lewis M.; and Wells, Roy E., 3,793,688.
Shull, Bradford K.: *See—*
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Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,794,469.
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Sights, Robert S. Amusement ride. 3,793,962, Cl. 104-61.000.
Sigriz, Paul Non: *See—*
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Silva, Antonio V. System to compensate for roll eccentricity effects and/or to simulate a mill with variable stretch characteristics. 3,793,860, Cl. 72-11.000.
Silverstone, Calvin Eric: *See—*
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Simmonds, Robert C., Jr., to USM Corporation. Method and apparatus for mixing and dispensing. 3,794,301, Cl. 259-7.000.
SimonOVermot, Andre; and Hofer, Eric M., to Les Fabriques d'Assortiments Reunies. Method for manufacturing dials for watches and dials for watches manufactured according to said method. 3,793,824, Cl. 58-91.000.
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Sinclair & Valentine Company, Inc.: *See—*
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Singer Company, The: *See—*
Adams, Kenneth D., 3,793,969.
Darboven, Ernest F.; and Solomon, Leon R., 3,794,771.
Mishcon, Lester; and Reagan, Donald W., 3,793,853.
O'Connor, Daniel G., 3,794,981.
Singewald, Arno, to Wintershall Aktiengesellschaft. Process for flotation of large size mineral particles. 3,794,159, Cl. 209-12.000.
Sircom, Richard C., to Federal Pacific Electric Company. Ground fault interrupter with pulsed neutral-to-ground fault detector. 3,794,884, Cl. 317-18.00d.
Sirk, Frank L.: *See—*
Tariabini, Joseph J.; and Sirk, Frank L., 3,794,340.
Sisk, Francis J.; and Watson, Robert F., Jr., to Westinghouse Electric Corporation. Apparatus for dissociating collected solids from a filtration membrane. 3,794,169, Cl. 210-140.000.
Sisson, Kenneth O., to General Motors Corporation. Bulkhead mounting and sealing arrangement for improved roller drive mechanism. 3,793,855, Cl. 68-23.700.
Sittman, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co., GmbH. Front supporting mechanism of a ski safety binding. 3,794,337, Cl. 280-11.35t.
Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co., GmbH. Ski binding with ski brake. 3,794,336, Cl. 280-11.13b.
Skagerberg, William E., to General Mills Chemicals, Inc. Process for forming borehold plugs. 3,794,115, Cl. 166-294.000.
Skamatsu, Takashi: *See—*
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Skau, Evald L.: *See—*
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Skingley, Brian Stanley; and Curtis, Anthony Thomas, to Marconi Company Limited, The. Diversity combining arrangements. 3,794,926, Cl. 328-104.000.
Slaughter, Delia L., 20% to Lee, Raymond, Organization, Inc., The. Foldable plant support. 3,793,771, Cl. 47-44.000.
Slessor, John M., to Ford Motor Company. Elastomeric energy absorber. 3,794,367, Cl. 293-88.000.
Sletzinger, Meyer; Karady, Sandor; and Ly, Manuel G., to Merck & Co., Inc. Process for the preparation of $\alpha$ hydrazino-$\beta$ phenylpropionic acids. 3,794,681, Cl. 260-519.000.
Smedley, Anderson B.: *See—*
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Smedley, Paul A.; and Smedley, Anderson B. Earthquake resistant support. 3,794,277, Cl. 248-20.000.
Smidth, F. L., & Co.: *See—*
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Smith, Grace Lechner: *See—*
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Smith, Horace L., Jr., to Smitherm Industries, Inc. Drying apparatus with moisture profile control. 3,793,741, Cl. 34-48.000.
Smith International, Inc.: *See—*
Pereau, Robert L., 3,794,126.
Smith, John Cambridge, to Hydro-Mite, Limited. Radial piston hydraulic machines. 3,793,923, Cl. 91-488.000.
Smith, Lawrence Edward; and Neal, David Lynn, to RCA Corporation. Jitter immune transistorized vertical deflection circuit. 3,794,877, Cl. 315-27.0td.
Smith, Lawrence M.: *See—*
Peters, Sherman M.; and Smith, Lawrence M., 3,794,848.
Smith, Leary W.; and Bryant, Ellis H., Jr., to Audichron Company, The. Announcement apparatus having independently variable message segments. 3,794,778, Cl. 179-100.10c.
Smith, Marion D.: *See—*
Williams, Russell C.; and Smith, Marion D., 3,793,906.
Smith, Thomas B., to Ikor Incorporated. Apparatus for and method of sensing particulate matter. 3,794,909, Cl. 324-32.000.
Smith, Vigo N.; and Bowers, Richard C., to Shell Oil Company. Scanning infrared spectroscopic analyzer using rotating variable filter. 3,794,425, Cl. 356-51.000.
Smith-Berger Manufacturing Corporation: *See—*
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Smith-Inland, A.O., Inc.: *See—*
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Smith-Johannsen, Robert, to Raychem Corporation. Method of making self limiting heat elements. 3,793,716, Cl. 29-611.000.
Smitherm Industries, Inc.: *See—*
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Smithkline Corporation: *See—*
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Smolka, Thomas Gordon; and Schweizer, Gottfried, to Gertsch AG, mesne. Safety release ski bindings. 3,794,338, Cl. 280-11.35t.
Smolka, Thomas Gordon, to Gertsch AG, mesne. Releasable ski binding. 3,794,339, Cl. 280-11.35m.
Snider, Richard J., to Atlantic Richfield Company. Rotary wafer switch having rotor mounted, spiral arranged axial bridging contacts. 3,794,784, Cl. 200-11.00a.
Snodgrass, Hugh E.: *See—*
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Snyder Manufacturing Company Inc.: *See—*
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Snyder, Roderick C., to Loed Corporation. Convertible snow plow with auxiliary ground support. 3,793,752, Cl. 37-42.00r.
Snyderman, Joseph, to Eppler, John, Machine Works, Inc. Spiral tube winding machine. 3,793,929, Cl. 93-80.000.
Sobel, Johannes; Nittel, Fritz; Pelz, Willibald; and Himmelmann, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Photographic layers which contain UV-absorbers. 3,794,493, Cl. 96-84.00r.
Societe Anonyme Automobiles Citroen: *See—*
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Societe Anonyme des Usines Chausson: *See—*
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Societe d'Applications Generales d'Electricite et de Mecanique: *See—*
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Societe Francaise d'Agrafage Industrieel: *See—*
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Societe Lannionnaise d'Electronique: *See—*
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Solartron Electronic Group Limited, The: *See—*
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Solid State Technology Inc.: *See—*
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Solomon, Leon R.: *See—*
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Songer, Robert D.; and Carter, Warren E., to Perfect Equipment Corporation. Wheel weight tool. 3,793,656, Cl. 7-8.000.
Sony Corporation: *See—*
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Southgate, Al Paiso; and Battle, Jno R. Horse shoe. 3,794,119, Cl. 168-18.000.
Southwire Company: *See—*
Chia, Enrique C.; and Schoerner, Roger J., 3,794,484.
Sowell, Lyles Howard, to Du Pont de Nemours, E. I., and Company. Textile core with a breakaway stringup slot. 3,794,260, Cl. 242-125.100.
Soyana, Ryoji, to Kitamura Valve Mfg. Co., Ltd. Ball valve apparatus. 3,794,291, Cl. 251-171.000.
Spano, Eduardo Victor; Sueiro, Otilia; Gonzalez, Oscar Pedro; and Campiani, Noem Mabel. Machine for continuously filling measured quantities of materials. 3,794,087, Cl. 141-131.000.
Sparks, Meredith P. Parking aid. 3,793,981, Cl. 116-28.00r.
Spatz Corporation: *See—*
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Spatz, Walter B., to Spatz Corporation. Applicator for fluids. 3,794,432, Cl. 401-262.000.
Spears, Robert Wayne: *See—*
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Specht, Dieter, to Stein, Hans Von, OHG. Tubular roller. 3,793,689, Cl. 29-116.00r.
Sperry Rand Corporation: *See—*
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Clevenger, James T.; and Stohler, John L., 3,794,195.
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Klem, Charles D.; Riall, Robert T.; and Wallace, Richard A., 3,794,070.
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Robbins, Kenneth W.; and Robbins, Gerald F., 3,794,996.
Wagstaff, Robert A.; and Waldrop, Thomas W., 3,793,792.
Spes, Hellmuth; Kunstle, Gerhard; and Siegl, Herbert, to Wacker-Chemie G.m.b.H. Process for continuously producing acetylacetone. 3,794,686, Cl. 260-595.000.
Spetz, Mary Ann. Pre-constructed buttonhole and method of incorporating same in a garment. 3,793,647, Cl. 2-266.000.
Spetz, William L., to Mosler Safe Company, The. Verification system. 3,794,813, Cl. 235-61.70b.
Spidle, Robert D.: *See—*
Lopez, Enrique; Spidle, Robert D.; and Beazley, Aubrey Glenn, 3,794,153.
Spindle, Harvey E.; Meyer, Jeffry R.; and Hess, Robert L., to Westinghouse Electric Corporation. Gas insulated switch with adjustable overcenter toggle actuator therefore. 3,794,799, Cl. 200-153.00g.
Sponseller, Trent A.: *See—*
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Spray-A-Matic Products, Inc.: *See—*
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Spring Chemicals Limited: *See—*
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Springer, Howard D.: *See—*
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Squibb, E. R., and Sons, Inc.: *See—*
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Stach, Kurt: *See—*
Wiedemann, Fritz; Thiel, Max; Stach, Kurt; Roesch, Egon; and Hardebeck, Klaus, 3,794,637.
Stachniak, Raymond M.: *See—*
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Standard Oil Company: *See—*
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Stark, Donald Sutherland, to Nationale Research Development Corporation. Neutron generators. 3,794,875, Cl. 313-61.00s.
Stark, William Hubbard: *See—*
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Staron, Philippe, to Compagnie Generale de Geophysique. Systems for the transmission of control and/or measurement information. 3,794,978, Cl. 340-170.000.
Stauffer Chemical Company: *See—*
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Chadha, Rajendra Nath; Crawford, James Edwin; and Getson, John Charles (said Chadha, said Lewis and said Getson, assors. to), 3,794,694.
Stearns, Stanley D. Bicycle carrier for vehicles. 3,794,227, Cl. 224-42.010.
Steggerda, Willem A., to Compagnie Francaise. Method for the recovery of isobutylene. 3,794,690, Cl. 260-677.00a.
Steighner, John C., to Hockensmith Corporation, The. Cupola charging apparatus. 3,794,189, Cl. 214-18.0sc.
Stein, Dieter: *See—*
Bronstert, Klaus; Kastning, Ernst-Guenther; Kurze, Joachim; Ladenberger, Volker; and Stein, Dieter, 3,794,697.
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Stender, Herbert. Target cups in ten pin configuration and projector having foul varying capability. 3,794,325, Cl. 273-101.000.
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Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Evgeny Emelyanovich; Nikolaenko, Evgeny Gigorievich; Stepnov, Alexandr Nikolaevich; Tsarev, Georgy Grigorlevich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,794,106.
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Stermann, Peter Henry, to BP Chemicals, Limited. Thermosetting compositions comprising high vinyl butadine polymer and a free radical initiator. 3,794,638, Cl. 260-94.70a.
Sterrett, John D.; and Baeslack, Alfred J., to Westinghouse Electric Corporation. Method and apparatus for controlling crown in a plate rolling mill. 3,793,859, Cl. 72-8.000.
Steuernagel, Walter, to Metallgesellschaft Aktiengesellschaft. Collector electrode for electrostatic precipitator. 3,793,804, Cl. 55-112.000.
Stewart, Joe K. Oil recovery apparatus. 3,794,175, Cl. 210-242.000.
Stiles, Alvin B., to Du Pont de Nemours, E. I., and Company. Highly-active supported catalysts. 3,794,588, Cl. 252-462.000.
Stith, Joe D.: *See—*
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Stoll, Kurt; and Schwenk, Willy. Multiway valve. 3,794,075, Cl. 137-625.660.
Stoltman, Donald D., to General Motors Corporation. Throttle pedal controlled throttle override system. 3,794,004, Cl. 123-97.00b.
Stout, James T., to Mead Corporation, The. Article carrier. 3,794,210, Cl. 206-173.000.
Stout, Lilburn Grady; Butler, Robert F.; and Morris, James Allen, to United States of America, Navy. Gun launched, digital, variable time fuxe. 3,793,957, Cl. 102-70.20r.
Stragier, Marcel G. Non-stop refuse collection system. 3,794,197, Cl. 214-302.000.
Strange, Lloyd K., to Mobil Oil Corporation. Combination in situ combustion displacement and steam stimulation of producing wells. 3,794,113, Cl. 166-245.000.
Stratton, Charlotte D.: *See—*
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Strauss, Alan J.: *See—*
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Strong, John D. Method of forming refractive optical elements for infrared radiation. 3,794,704, Cl. 264-1.000.
Strunk, Larry L.: *See—*
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Struthers Scientific and International Corporation: *See—*
Ganiaris, Neophytos, 3,793,740.
Stuber, Fred A.: *See—*
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Stubits, Marcella C., to Anheuser-Busch Incorporated. Method of removing melted fats from the surface of an edible aqueous solution. 3,794,743, Cl. 426-417.000.
Stump, Theodore M.; and Williford, Jerry G., to Collins Radio Company. Frequency shift keyed demodulator. 3,794,928, Cl. 329-104.000.
Sturm, Walter. Device for adapting the lengths of a pair of legs, such as those of a ladder, to unevenness of a supporting surface. 3,794,141, Cl. 182-202.000.
Sudbury Blasting Mates, Limited: *See—*
Lewis, Douglas L., 3,793,953.
Sueiro, Otilia: *See—*
Spano, Eduardo Victor; Sueiro, Otilia; Gonzalez, Oscar Pedro; and Campiani, Noem Mabel, 3,794,087.
Sugar, Joseph, to International Telephone and Telegraph Corporation. Junction shell. 3,794,960, Cl. 339-107.000.
Sugi, Nagatoshi; Yoshikawa, Kiichiro; and Isokawa, Hideo, to Nippon Zeon Co. Ltd. Repeating elongation-fatigue testing machine of elastic materials under a constant load. 3,793,880, Cl. 73-100.000.
Sugita, Sadao: *See—*
Ishihara, Masao; Wada, Tsuneo; Yamaguchi, Hisashi; and Sugita, Sadao, 3,794,495.
Sugiura, Shinzo; deceased (by Sugiura, Yoko; administratrix); and Morioka, Takeshi, to Hitachi, Ltd. Driving apparatus for motor vehicle. 3,794,133, Cl. 180-65.00r.
Sugiura, Yoko: *See—*
Sugiura, Shinzo; and Morioka, Takeshi, 3,794,133.
Sumitomo Chemical Company, Ltd.: *See—*
Hotta, Seiji; Yanagihara, Hideki; and Skamatsu, Takashi, 3,794,666.
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Baron, Joseph J., Jr., 3,794,465.
Sunbeam Corporation: *See—*
Gallanis, George P.; and Komatsu, Ikuo I., 3,794,050.
Surving, Richard A. Model kit including temporary armature. 3,793,768, Cl. 46-1.00r.
Sutton, Max E.: *See—*
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Svejsa A/S: *See—*
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Swain, Paul E.: *See—*
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Swanson, Kenneth D., to Midland-Ross Corporation. Hydraulic booster with pedal travel control. 3,793,829, Cl. 60-547.000.

Sweet, Douglas W.: *See—*
Holleboom, Bruce W.; and Sweet, Douglas W., 3,793,826.

Switchcraft, Inc.: *See—*
Bailey, James R.; and Lavigne, Vernon W., 3,794,961.

Swoager, Jon R., to Automation Equipment, Inc. Resiliently suspended railway vehicle. 3,793,966, Cl. 105-178.000.

Sylvest, Karl Jens, to Smidth, F. L., & Co. Rotary kilns with uphill cooler tubes. 3,794,462, Cl. 432-80.000.

Synthelabo: *See—*
Najer, Henry; and Giudicelli, Jean-Francois, 3,794,657.

Syverson, Martelle J., to Fountain Industries, Inc. Adjustable timing cam for hot drink dispensers. 3,794,149, Cl. 194-13.000.

Szabo, Karoly, to Esso Research and Engineering Company. Control of insects with certain phosphorus-containing thiomorpholinones. 3,794,730, Cl. 424-200.000.

Szentesi, Peter. Rotor for high speed centrifuges. 3,794,241, Cl. 233-26.000.

Szilagyi, Gyula: *See—*
Gorog, Katalin, nee Privitizer; Bruckner, Gyorgyi; Farkas, Kalman; Grega, Erzsebet; Marosvolgyi, Sandor; Pinter, Zoltan; and Szilagyi, Gyula, 3,794,641.

Tabiichi, Yukio; Yamazaki, Yuichi; and Sato, Yoshiharu, to Nippon Telegraph and Telephone Public Corporation and Anritsy Electric Company Ltd. Coin telephone sets. 3,794,770, Cl. 179-6.30r.

Taconite Engineering & Manufacturing Co.: *See—*
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Taillie, Gordon P., to Standard Oil Company. Sheet binding. 3,794,550, Cl. 161-147.000.

Tajima, Tatsuya: *See—*
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Takagi, Susumu, to Yokogawa-Hewlett-Packard Ltd. Power supply circuit for a heating element. 3,794,808, Cl. 219-497.000.

Takahashi, Kentaro; Masegawa, Minoru; and Nara, Kaoru, to Nippon Piston Ring Co., Ltd. Thermal and abrasion resistant sintered alloy. 3,793,691, Cl. 29-182.000.

Takahashi, Masaaki: *See—*
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Takahashi, Masao: *See—*
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Takamiya, Saburo, to Mitsubishi Denki Kabushiki Kaisha. High speed response phototransistor and method of making the same. 3,794,891, Cl. 317-235.00r.

Takano, Hiroshi: *See—*
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Takigami, Katshuiko: *See—*
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Tallman, Charles V., to United States of America, Navy. Method of making compliant suspension cable. 3,793,823, Cl. 57-163.000.

Taltavull, Ignacio. Non-luminance lighting panel. 3,794,829, Cl. 240-106.00r.

Tamny, Simon Z.; Hastings, Donald R.; and Wilhelm, Frederick R., to Nordson Corporation. Electrostatic spray apparatus and method. 3,794,243, Cl. 239-3.000.

Tamozhnikov, Georgy Vasilievich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,794,104.

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Tannahill, Wilson Hume: *See—*
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Tariabini, Joseph J.; and Sirk, Frank L., to United Survey, Inc. Adjustable skid for pipe inspection or survey equipment. 3,794,340, Cl. 280-15.000.

Tarnoff, Sherwin S., to Air Balance, Inc. Air damper. 3,793,932, Cl. 98-110.000.

Tassie, Douglas P.: *See—*
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Tassone, George A.: *See—*
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Tata, Raymond V., to Leesona Corporation. Bobbin sorting. 3,794,160, Cl. 209-90.000.

Tate, Jack Franklin, to Texaco Inc. Method of and composition for the prevention of scale. 3,794,596, Cl. 252-180.000.

Tate, John L.; and Jackson, Robert L., to Amelcan Air Filter Company, Inc. Fluid treating filter. 3,793,692, Cl. 29-163.50f.

Taya, Miguel Margarit. Iron composition for treating anemia. 3,794,722, Cl. 424-147.000.

Taylor, Julian S. Pressure conducting probe receiving plug. 3,794,289, Cl. 251-149.700.

Taylor, Thomas L. Step auger and rock bit combination. 3,794,129, Cl. 175-391.000.

Taylor Woodrow Construction Limited: *See—*
Brunton, John David, 3,793,878.
Davies, Ivor Llewellyn; and Burrow, Reginald Edwin, 3,794,559.

Teagan, William P., to Thermo Electron Corporation. Vapor generator and control therefor. 3,793,993, Cl. 122-33.000.

Tecalemit (Engineering) Limited: *See—*
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Technology Applications Corporation: *See—*
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Telmar, Inc.: *See—*
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Tempelhof, Hermann. Work trousers. 3,793,646, Cl. 2-227.000.

Temper Corporation: *See—*
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Temple, Ernest E.; and Giebel, Joseph L., to Mine Safety Appliances Company. Explosively actuated underwater anchor line cutter. 3,793,978, Cl. 114-221.00a.

Templin, Lawrence R., to Hughes Aircraft Company. Automatic antenna impedance tuner including digital control circuits. 3,794,941, Cl. 333-17.000.

Tenneco Inc.: *See—*
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Hetherington, Theodore W.; and Strunk, Larry L., 3,794,139.

Tennessee Valley Authority: *See—*
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Teodorescu, Constantin Gh.; Ceauselu, Constantin N.; and Vasilescu, Grigore Vlasie, to Institutul Pentrui Creatie Stintifica si Tehnica (Increst). Device for attenuating the noise generated by the expansion of gases into the atmosphere. 3,794,137, Cl. 181-3.00e.

Tepper, Joel, to Lee, Raymond, Organization, Inc., The. Motor vehicle andi-skid device. 3,794,144, Cl. 188-4.00r.

Terho, Matti; and Tiitto, Reijo. Carrier for containers. 3,794,196, Cl. 214-390.000.

Terracol, Claude, to Merlin Gerin, Societe Anonyme. Automatic tripping electro-magnetic contactor. 3,794,945, Cl. 335-188.000.

Terrell, Ross C., to Airco, Inc. 1-Chloro-1-hydro-perfluorobutyl difluoromethyl ether. 3,794,688, Cl. 260-614.00f.

Tesitor, Charles N.: *See—*
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Bean, Kenneth E.; and Gleim, Paul S., 3,793,712.
Bell, De Lamar T., Jr.; and Lee, Robert E., 3,795,000.
Bodge, Clifford A., 3,794,800.
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Kilner, Oliver H., 3,794,950.
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Textron, Inc.: *See—*
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Carlson, Raymond H.; and Reiland, Bernard F., 3,794,092.
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Thaeler, Bruce K., 3,793,683.
Thackston, Clyde David; and Kasabian, Jack, to Rockwell International Corporation. Devices for attaching accessories. 3,794,335, Cl. 279-23.000.
Thaeler, Bruce K., to Textron, Inc. Adhesive installed slide fastener. 3,793,683, Cl. 24-205.10r.
Thaler, Sherwood S., to American Optical Corporation. Passive hysteresis curcuit demand pacer. 3,794,045, Cl. 128-419.00p.
Theiss, Russell V.: *See—*
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Thiem Corporation: *See—*
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Thompson, Bernard J., to Raytheon Company. Modulation signal generator and apparatus using such generator. 3,794,995, Cl. 343-5.0dp.
Thompson, Donald R., to Goodyear Tire & Rubber Company, The. Method of making a metal laminate. 3,794,529, Cl. 148-6.15r.
Thompson, Eugene D.: *See—*
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Thompson, James K.: *See—*
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Thompson, James L., to Dow Chemical Company, The. Scale removal. 3,794,523, Cl. 134-3.000.
Thomson, Peter. Personal defence device. 3,794,791, Cl. 200-61.930.
Thomson-CSF: *See—*
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Thorne-Booth, George M.; and Hoyler, Robert C., to Westinghouse Electric Corporation. Multiplex control system for controlling the operation of a plurality of stations. 3,794,977, Cl. 340-163.000.
Thorneburg Hosiery Mills, Inc.: *See—*
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Thorneburg, James L., to Thorneburg Hosiery Mills, Inc. Boot sock. 3,793,851, Cl. 66-185.000.
Throckmorton, Morford C.; and Mournichan, Robert E., to Goodyear Tire & Rubber Company, The. Diolefin polymerization catalyst composition. 3,794,604, Cl. 252-431.00c.
Thum, Waldemar: *See—*
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Tocom, Inc.: *See—*
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Todd, Leonard M. Telephone line seizure switches. 3,794,764, Cl. 179-2.00a.
Todd, Leonard M. Control circuit for telephone answering set using conventional recorders and reproducers. 3,794,767, Cl. 179-6.00r.
Todd, Theodore J.; and Spears, Robert Wayne. Trickle emitter for subterranean irrigation. 3,794,073, Cl. 137-608.000.
Toko Kogyo Kabushiki Kaisha: *See—*
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Tokyo Shibaur-Electrek Co., Ltd.: *See—*
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Tokyo Shibayra Electric Company, Ltd.: *See—*
Kishi, Heiji; Takigami, Katshuiko; and Shirasaka, Yoshihiro, 3,794,885.
Toman, Thomas G. Climbing rope gymnastic apparatus. 3,794,316, Cl. 272-60.000.
Tomany, James P.; and Cash, George H., to Universal Oil Products Company. Ventri-sphere high energy scrubber. 3,793,809, Cl. 55-91.000.
Tomasovitch, Jean: *See—*
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Tombs, Michael Peter: *See—*
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Tomlinson, Neil, to Lucas, Joseph, (Industries) Limited. Switch actuating mechanism for turn indicator type switches. 3,794,785, Cl. 200-61.270.
Tong, Duncan, to Playart Limited. Battery powered toys. 3,793,769, Cl. 46-243.0mv.
Topliss, John G.: *See—*
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Toray Industries, Inc.: *See—*
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Torimitsj, Seiichi; and Takahashi, Masao, to Toray Industries, Inc. Aqueous acrylic resin electrodeposition coating composition containing a mixture of organic amines. 3,794,607, Cl. 260-29.6ta.
Torok, Robert. Snow sled and the like. 3,794,341, Cl. 280-21.00r.
Torregrossa, Joyce Burroughs: *See—*
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Tosaka, Umi: *See—*
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Transportation Technology, Inc.: *See—*
Mooney, John J.; Marshman, Frank E.; and Donlon, Richard H., 3,793,963.
Trauger, Ronald L.; and Zarembka, Robert L., to Goodyear Tire & Rubber Company, The. Carbon disk processing technique to retard oxidation. 3,794,509, Cl. 117-4.000.
Trayer, Frank C. Submersible swith and double toggle, power transmission member operating mechanism therefor. 3,794,798, Cl. 200-153.00g.
Trico Products Corporation: *See—*
Riester, William C.; and Graczyk, Bronislaus S., 3,793,670.
Tromans, Keith, to Lucas, Joseph, (Electrical) Limited. Ignition distributor housing and resiliently attached distributor base plate. 3,794,795, Cl. 200-293.000.
Trosclair, Hayes J. Propeller hitch device. 3,793,979, Cl. 115-5.00r.
Truesdale, Herbert W.: *See—*
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Seiler, Doanld J.; Shalaty, John H.; and Anderson, Frederick V., 3,793,999.
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Tsuchiya, Toru; and Shida, Seiya, to Nippon Electric Company, Limited. Variable equalizer. 3,794,935, Cl. 333-28.00r.
Tsuchiya, Yoshinori: *See—*
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Turbak, Albin F.; and Rose, Henry J., to Tee-Pak, Inc. Saran coating of cellulosic casing. 3,794,515, Cl. 117-145.000.
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Turek, Robert P., to Bowles Fluidics Corporation. Fluidic fuel injection system utilizing simplified fluidic computation element. 3,794,005, Cl. 123-119.00r.
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Ulrich, Henri; Stuber, Fred A.; and Broggi, Allen J., to Upjohn Company, The. Radiation sensitive polymers. 3,794,626, Cl. 260-78.50t.

Ultrasonic Systems, Inc.: *See—*
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Kuris, Arthur; Balamuth, Lewis; and Farina, Anthony P., 3,793,723.
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Underwood Rivers Company: *See—*
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United Aircraft Corporation: *See—*
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Wirth, Christian; and Albi, George J., said Christian Wirth assor. to Hooker Chemical Corporation. Method of introducing breathability to a non-porous continuous plastic film. 3,794,548, Cl. 161-89.000.

Wirz, Peter: *See*—
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Wohl, Arnold J.; Daniels, Peter J.; and Topliss, John G., to Schering Corporation. Inhibiting blood platelet aggregation. 3,794,729, Cl. 424-337.000.

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Wolfe, Merritt W., to Goodyear Tire & Rubber Company, The. Apparatus used in repairing defective spots in large tires. 3,794,452, Cl. 425-15.000.

Wolfinger, John F., to General Electric Company. Circuitry for detecting low amplitude rapid variations in a high amplitude output signal. 3,794,915, Cl. 324-111.000.

Wood, Walter A.; and Hutchins, Dale, to Lockheed Missiles & Space Company, Inc. Detachable articulation joint for ground vehicles. 3,794,134, Cl. 180-79.20b.

Woodall, Hubert C., Jr.: *See*—
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Woodgate, Paul L.: *See*—
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Woodmansee, John B. Attachment for operating tool accessories. 3,794,434, Cl. 408-56.000.

Woodward, Ernest F. Detachable vehicle enclosure. 3,794,375, Cl. 296-36.000.

Woodward, Gary F., to Ford Motor Company. EGR warning system. 3,794,006, Cl. 123-119.00a.

Woolsey Marine Industries, Inc.: *See—*
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Wootten, William A. Method and apparatus for forming a panel for use as a structural element. 3,793,791, Cl. 52-615.000.

Wootten, William A. Paper board connecting method. 3,793,928, Cl. 93-1.100.

Wosser, Joseph L., Jr. Method and apparatus for storing and attaching tire chains. 3,794,094, Cl. 152-213.000.

Woudstra, John C.; d/b/a Mid State Mfg. Co.: *See—*
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Wright, Barry, Corporation: *See—*
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Wright, Herbert L. Power transmitting device. 3,793,895, Cl. 74-63.000.

Wurth, Anthony Brillenburg. Windscreen washer. 3,793,666, Cl. 15-250.040.

Wynberg, Nans; Emerson, David W.; and Huurdeman, Wilhelmus F. J., to Squibb, E. R., & Sons, Inc. Process for converting oxathiolanes, dithiolanes and dithianes to aldehydes or ketones. 3,794,669, Cl. 260-397.200.

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Yabuuchi, Takahiro; Fujimura, Hajime; Nakagawa, Akira; and Kimura, Ryuichi, to Hisamitsu Pharmaceutical Co., Inc. Quinazolinedione derivatives. 3,794,643, Cl. 260-260.000.

Yamada, Hiromi: *See—*
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Yamaguchi, Isao: *See—*
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Yamamoto, Yakichi, to Ishikawa Seisakusho Ltd. Doffing and donning apparatus usable for textile machines such as draw-twisters. 3,793,818, Cl. 57-52.000.

Yamazaki, Yuichi: *See—*
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Yanagida, Mareo; Saranoue, Susumu; Nakagawa, Hideyuki; and Bruderer, Werner, to Concast AG. Method and apparatus for opening a sealing element, which cannot be actuated, of the bottom nozzle of a casting vessel. 3,794,218, Cl. 222-1.000.

Yanagihara, Hideki: *See—*
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Yao, Shi-Kuang, to GAF Corporation. Double peak sensitization of sensitizing dyes for photographic silver halide emulsions in lipophilic systems. 3,794,498, Cl. 96-124.000.

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Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich; Mikotin, Evgeny Emelyanovich; Nikolaenko, Evgeny Gigorievich; Stepnov, Alexandr Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,794,106.

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Yokoi, Minoru; and Yokoi, Yoshiko. Rotary engine. 3,793,998, Cl. 123-43.00r.

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Yonlyama, Tsuneo: *See—*
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Young, Donald G., to Dow Corning Corporation. Primer composition for adhering silicone elastomer to substrates. 3,794,556, Cl. 161-206.000.

Young, Murray L.: *See—*
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Yperman, Jean Michel Baudry Ghislain; and Belhomme, Charles, to U.S. Philips Corporation, mesne. Electric circuit elements and methods of manufacturing such elements. 3,794,517, Cl. 117-217.000.

Yuhara, Hideo: *See—*
Watanabe, Toshiaki; and Yuhara, Hideo, 3,793,708.

Zackay, Victory F.: *See—*
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Zadde, Vitaly Vinktorovich: *See—*
Lidorenko, Nikolai Stepanovich; Landsman, Arkady Pavlovich; Strebkov, Dmitry Semenovich; Zaitseva, Aita Konstantinovna; Zadde, Vitaly Vinktorovich; and Kosarev, Viktor Sergeevich, 3,793,713.

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Zens, John F., to General Motors Corporation. Occupant restraint system. 3,794,347, Cl. 280-150.0ab.

Ziegler, Charles O., 25% to Kanfer, Herman. Vessel anchor. 3,793,977, Cl. 114-208.000.

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Zinc Corporation Limited, The: *See—*
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Zuckerman, Mathew M.; and Molof, Alan H., to Envirotech Corporation. wastewater treatment. 3,794,581, Cl. 210-9.000.

Zukerman, Yoram; Ben-Porath, Moshe; and Sabbah, Benjamin, to Elscint Ltd. Video-display-processor. 3,794,762, Cl. 178-6.800.

Zwarenstein, Salomon Carel. Frequency detection circuit. 3,794,853, Cl. 307-233.000.

# LIST OF REISSUE PATENTEES

TO WHOM

## PATENTS WERE ISSUED ON THE 26TH DAY OF FEBRUARY, 1974

NOTE.--Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Boragine, Carlo: *See*—
Bruengger, Heinrich, and Boragine. Re. 27,933.

Bruengger, Heinrich, and C. Boragine, to Ciba Ltd, Photographic material for the silver dye bleaching process. Re. 27,933, 2–26–74, Cl. 96—99.

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Bruengger, Heinrich, and Boragine. Re. 27,933.

House, Randolph D., to United Aircraft Corp. Vacuum vapor deposition with control of elevation of metal melt. Re. 27,930, 2–26–74, Cl. 117—107.

Kohlmuller, Hans: *See*—
Von Strum, Ferdinand, and Kohlmuller. Re. 27,929.

Mettetal, Donald, Jr., to Andrew F. Wintercorn. Outboard motor tilting mechanism. Re. 27,932, 2–26–74, Cl. 115—41.

RCA Corp.: *See*—
Yu, Edwin K. C. Re. 27,928.

Siemens Aktiengesellschaft: *See*—
Von Strum, Ferdinand, and Kohlmuller. Re. 27,929.

Sukup, Eugene G. Apparatus for aerating stored grain. Re. 27,931, 2–26–74, Cl. 259—102.

United Aircraft Corp.: *See*—
House, Randolph D. Re. 27,930.

Von Strum, Ferdinand, and H. Kohlmuller, to Siemens Aktiengesellschaft. Device for producing gaseous reactants particularly hydrogen and oxygen for fuel cells. Re. 27,929, 2–26–74, Cl. 23—282.

Wintercorn, Andrew F.: *See*—
Mettetal, Donald, Jr. Re. 27,932.

Yu, Edwin K. C., to RCA Corp. Gated flip-flop employing plural transistors and plural capacitors cooperating to minimize flip-flop recovery time. Re. 27,928, 2–26–74, Cl. 307—247.

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Andrea, Frank. Geranium plant. 3,498, 2–26–74. Cl. 68.

Ballas, Anastasia C.: *See*—
Ballas, Milton C. 3,497.

Ballas, Milton C., ½ interest to Ballas, Anastasia C. Ivy plant. 3,497, 2–26–74, Cl. 67.

Blount, Floyd. Apple tree. 3,496, 2–26–74, Cl. 34.

Duffett, William E.: *See*—
Mack, Grace H., Jessell, and Duffett. 3,500.

Garrett, Curran L.: *See*—
Garrett, Curran L., and Mahoney. 3,491.

Garrett, Curran L., and J. T. Mahoney, to Curran L. Garrett. St. Augustine grass. 3,491, 2–26–74, Cl. 88.

Gavello, Louis E. Hebe (Veronica) plant. 3,493, 2–26–74, Cl. 54.

Gavello, Louis E. Hebe (Veronica) plant. 3,494, 2–26–74. Cl. 54.

Gavello, Louis E. Hebe (Veronica) plant. 3,495, 2–26–74, Cl. 54.

Hall, G. B.: *See*—
Machin, Barrie J., and Hall. 3,499.

Jackson & Perkins Co.: *See*—
Warriner, William A. 3,492.

Jessel, Walter H., Jr.: *See*—
Mack, Grace H., Jessel, and Duffett. 3,500.

Machin, Barrie J., and G. B. Hall, to Yoder Brothers, Inc. Chrysanthemum plant. 3,499, 2–26–74, Cl. 74.

Mack, Grace H.: *See*—
Mack, Grace H., Jessel, Jr., and Duffett. 3,500.

Mack, Grace H., W. H. Jessel, Jr., and W. E. Duffett, to Grace H. Mack. Chrysanthemum plant. 3,500, 2–26–74, Cl. 75.

Mahoney, Joseph T.: *See*—
Garrett, Curran L., and Mahoney. 3,491.

Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,492. 2–26–74, Cl. 18.

Yoder Brothers, Inc.: *See*—
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ATI Recreation Inc.: *See*—
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Acoustic Fiber Sound Systems, Inc.: *See*—
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Bailey, Robert A. Case for a hand saw. 230,529, 2–26–74, Cl. D87—1.

Bass, Sidney, and A. B. Laird, to Mattel, Inc. Construction toy. 230,490, 2–26–74, Cl. D34—2.

Bateman, Robert F., to Plastics, Inc. Drinking cup. 230,457, 2–26–74, Cl. D7—9.

Benson Mfg. Corp.: *See*—
Littman, Bruce A., Memmel, and Waldheim. 230,478.

Berkey Photo, Inc.: *See*—
Emmerling, Ronald. 230,514.

Berkman, Joseph L. Tape cassette cabinet. 230,527, 2–26–74, Cl. D87—1.

Beckman, Joseph L. Tape cartridge cabinet. 230,528, 2–26–74, Cl. D87—1.

Bernheiser, Charles A., to W. R. Grace, & Co. Food container. 230,471, 2–26–74, Cl. D9—182.

Bethune, Ade, to Terra-Sancta Creations, Inc. Pendant. 230,499, 2–26–74, Cl. D45—16.

Boano, Gianpaolo, to Fiat Societa per Azioni. Lens for tail light assembly. 230,501, 2–26–74, Cl. D48—32.

Bohn, Karl A., and F. Shaw, said F. Shaw, assor. to Karl A. Bohn. Multipurpose band metal fabricating tool. 230,467, 2–26–74, Cl. D8—55.

Bruce, Peter. Anchor. 230,518, 2–26–74, Cl. D71—1.

Carney, John F., to Morton-Norwich Products, Inc. Urethral dilator-catheter or similar article. 230,523, 2–26–74, Cl. D83—12.

Chrisler, Tanner S. Display case divider. 230,445, 2–26–74, Cl. D6—85.

Clark, Charles A. Combined escape apparatus and line-brake. 230,436, 2–26–74, Cl. D2—27.

Cohen, Maurice. End support for a garment display rack. 230,447, 2–26–74, Cl. D6—193.

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Cohen, Maurice. Article holder for a display rack. 230,449, 2–26–74. Cl. D6—194.

Cohen, Maurice. Article holder for a display rack 230,450, 2–26–74, Cl. D6—194.

Cohen, Maurice. End post for a garment display rack. 230,451, 2–26–74. Cl. D6—195.

Cohen, William J. Sport shoe. 230,440, 2–26–74, Cl. D2—279.

Dahle, Gerald. Hand-puncher. 230,520, 2–26–74, Cl. D74—1.

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Delbar Products, Inc.: *See*—
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Holzman, James W. 230,477.

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Digital Equipment Corp.: *See*—
Jenkins, Paul A. 230,485.

Dopera, Rudolph. Fringe for a musical instrument. 230,442, 2–26–74, Cl. D3—32.

Elam, Elbert F. Set of chess pieces. 230,494, 2–26–74, Cl. D34—5.

Emmerling, Ronald, to Berkey Photo, Inc. Camera housing. 230,514, 2–26–74, Cl. D61—1.

Emmons, George H. Foldable ladder. 230,503, 2–26–74, Cl. D54—1.

Ernest, Robert O., to Sunbeam Corp. Electric iron handle. 230,463. 2–26–74, Cl. D7—204.

Everitt, Scott F., to Acoustic Fiber Sound Systems, Inc. Loudspeaker enclosure. 230,489, 2–26–74, Cl. D26—14.

Fairbairn, Geoffrey. Handle for a scribing tool or the like. 230,468, 2–26–74, Cl. D8—107.

Ferlat, Boris: *See*—
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Gale, James G. Web buckle. 230,464, 2–26–74, Cl. D8—44.

Gentry, Bobby C., and J. O. Lowery. Tape folder. 230,504, 2–26–74, Cl. D54—4.

Giroflex-Entwicklungs- AG: *See*—
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Glaberson, Martin, and G. L. Schick. Razor handle. 230,535, 2–26–74, Cl. D95—3.

Goodyear Tire & Rubber Co., The: *See*—
Stella, Robert A., and Stiffler. 230,532.
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Grace, W. R., & Co.: *See*—
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Gulotta, Gerald, to J. C. Penney, Co., Inc. Covered saucepan. 230,459, 2–26–74, Cl. D7—95.

Gulotta, Gerald, to J. C. Penney, Co., Inc. Fry pan. 230,460, 2–26–74, Cl. D7—95.

Gulotta, Gerald, to J. C. Penney, Co., Inc. Covered pan. 230,461, 2–26–74, Cl. D7—97.

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Harris, George M., to Harris-Hub Co., Inc. Bed rail. 230,453, 2–26–74, Cl. D6—198.

Hayes, Thomas H., to VCA Corp. Combined actuator and dispensing cap for a pressurized container. 230,472, 2–26–74, Cl. D9—258.

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Holzman, James W., to Delbar Products, Inc. Rear view mirror for vehicles. 230,476, 2–26–74. Cl. D12—187.

Holzman, James W., to Delbar Products, Inc. Rear view mirror vehicles. 230,477, 2–26–74, Cl. D12—187.

Hunt, Harry E., to Alpine Designs, Inc. Sleeping bag. 230,455, 2–26–74, Cl. D6—201.

Hutcheson, Claude H., and J. F. Zinni, to Xerox Corp. Document reproducing and sorting machine. 230,515, 2–26–74, Cl. D61—1.

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Iida, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Combined amplifier and record player. 230,508, 2–26–74, Cl. D56—4.

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Knapp, Lynton R., and R. W. Province, to MSI Data Corp. Electronic cash register. 230,502, 2–26–74. Cl. D52—4.

Kobayashi, Kazuki, to Kakushiki Kaisha Ricoh. Film reel. 230,512. 2–26–74, Cl. D61—1.

Kogoj, Oskar, and B. Ferlat, to Institut pohistvene Industrije "Meblo." Easy-chair. 230,444, 2–26–74, Cl. D6—37.

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Littman, Bruce A., R. O. Memmel, and J. B. Waldheim, to Benson Mfg. Corp. Downspout splash block. 230,478, 2–26–74, Cl. D18—2.

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MacDonald, Dwayne A. Electrical switch assembly. 230,486, 2–26–74, Cl. D26—13.

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Mover, Russell G. Hunter's belt. 230,441, 2–26–74, Cl. D2—381.

Okabe, Ken, and H. Yazawa, to Matsushita Electric Industrial Co., Ltd. Combined radio and phonograph or similar article. 230,507, 2–26–74, Cl. D56—4.

Oxford Pendaflex Corp.: *See*—
Saltz, Ira. 230,521.

Pace, Hugh N. Ash tray or the like. 230,524, 2–26–74, Cl. D85—2.

Patla, Jacob W., and L. Schachner, to Xerox Corp. Reproduction machine. 230,513, 2–26–74, Cl. D61—1.

Pedinielli, Gilbert, and D. Richelet, to International Business Machines Corp. Communication control desk or the like. 230,483, 2–26–74, Cl. D26—5.

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Gulotta, Gerald. 230,461.

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Plastics, Inc.: *See*—
Bateman, Robert F. 230,457.

Popeil Brothers, Inc.: *See*—
Popeil, Samuel L. 230,479.

Popeil, Samuel L., to Popeil Brothers, Inc. Fishing rig. 230,479. 2–26–74, Cl. D22—26.

Potsdam, Jay A. Boat upper shell. 230,473, 2–26–74, Cl. D12—70.

Price's Gas Equipment, Inc.: *See*—
Price, Melvin E. 230,446.

Price, Melvin E., to Price's Gas Equipment, Inc. Storage cabinet for gas cylinders. 230,446, 2–26–74, Cl. D6—186.

Province, Ralph W.: *See*—
Knapp, Lynton R., and Province. 230,502.

Rabuse, George R., to Minnesota Mining and Mfg. Co. Lens for ski goggles or the like. 230,437. 2–26–74, Cl. D2—234.

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Reddick, Willis C., to International Telephone and Telegraph Corp. Housing for emergency reporting call box. 230,519, 2–26–74, Cl. D72—1.

Rellis, Lawrence. Aircraft. 230,474, 2–26–74, Cl. D12—71.

Renou Plastics (Proprietary) Ltd.: *See*—
Renou, Cecil. 230,462.

Renou, Cecil, to Renou Plastics (Properietary) Ltd. Bucket. 230,462, 2–26–74, Cl. D7—187.

Reynolds, Richard L., to Illinois Tool Works, Inc. Washer device. 230,469, 2–26–74, Cl. D8—274.

Richelet, Daniel: *See*—
Pedinielli, Gilbert, and Richelet. 230,483.

Romer, Nicholas M.: *See*—
Romer, Carleton J. Jr., and N. M. 230,492.

Romer Plastics, Inc.: *See*—
Romer, Carleton J., Jr., and N. M. 230,492.

Romer, Carleton J., Jr., and N. M. Romer, to Romer Plastics, Inc. Golf tee. 230,492, 2–26–74, Cl. D34—5.

Rothman Industries, Inc.: *See*—
Rothman, Norman. 230,522.

Rothman, Norman, to Rothman Industries, Inc. Housing for an electronic exercise apparatus. 230,522, 2–26–74, Cl. D83—1.

Rowlands, Martin O., to IMI Opella Ltd. Faucet body. 230,481. 2–26–74, Cl. D23—32.

Royal Seating Corp.: *See*—
Jennings, Roy E. 230,452.

Rutherford, Russell G. Filling and capping machine. 230,505. 2–26–74, Cl. D55—1.

Sakow, Toshihiko, to Triump Werke Nuernberg A.G. Typewriter. 230,510, 2–26–74, Cl. D64—11.

Saltz, Ira, to Oxford Pendaflex Corp. Memo pad holder. 230,521, 2–26–74, Cl. D74—1.

Schachner, Leonard: *See*—
Patla, Jacob W., and Schachner. 230,513.

Schick, George L.: *See*—
Glaberson, Martin, and Schick. 230,535.

Schwartzman, Gilbert. Valve member. 230,480, 2–26–74, Cl. D23—19.

Shark Kabushiki Kaisha: *See*—
Yamagami, Masafumi. 230,484.

Shaw, Francis: *See*—
Bohn, Karl A., and Shaw. 230,467.

Shimizu, Haruo, to Denki Onkyo Co. Tape recorder. 230,488, 2–26–74, Cl. D26—14.

Shinn, John V. Combined carrying and display case for cosmetics or the like. 230,530, 2–26–74, Cl. D87—1.

Smith, Marjorie A. M. Double deck racing car trailer. 230,475, 2–26–74, Cl. D12—101.

Snyder, Jeffrey S. Combined jewelry box and tie rack. 230,526, 2–26–74, Cl. D87—1.

Stastny, Edwin O. Control for electrical vehicle. 230,496, 2–26–74, Cl. D34—15.

Steinkamp, Norman A.: *See*—
Hall, Richard B., and Steinkamp. 230,458.

Stieber, Wolfgang R., to The Mosler Safe Co. Remote customer banking terminal. 230,511, 2–27–74, Cl. D69—1.

Stiffler, James W.: *See*—
Stella, Robert A., and Stiffler. 230,532.

Stella, Robert A., and J. W. Stiffler, to The Goodyear Tire & Rubber Co. Tire. 230,532, 2–26–74, Cl. D90—20.

Strona, Secondo B. Inkle loom. 230,534, 2–26–74, Cl. D92—15.

Sunbeam Corp.: *See*—
Ernest, Robert O. 230,463.
Hall, Richard B., and Steinkamp. 230,458.

Terra-Sancta Creations, Inc.: *See*—
Bethune, Ade. 230,499.

Thomas, Morton I. Cane. 230,531, 2–26–74, Cl. D88—4.

Thompson, Ray N. Cushion. 230,454, 2–26–74, Cl. D6—201.

Triump Werke Nuernberg A.G.: *See*—
Sakow, Toshihiko. 230,510.

Tschann, George E. Shaker boards for automatic pin setting machines. 230,506, 2–26–74, Cl. D55—1.

VCA Corp. : *See*—
Hayes, Thomas H. 230,472.
Waldheim, Jack B. : *See*—
Littman, Bruce A., Memmel, and Waldheim. 230,478.
Ware, R. Louis. Plant growth apparatus. 230,493, 2–26–74, Cl. D35—3.
White, Henry L. Floor mat or the like. 230,456, 2–26–74, Cl. D6—212.
White, Lorell. Cabinet. 230,509, 2–26–74, Cl. D56—4.
Williams, Oscar S. Tractor cab. 230,498, 2–26–74, Cl. D40—5.
Wolf, Ernest C. Toy fork lift. 230,495, 2–26–74, Cl. D34—15.
Wolford, William W., to The Goodyear Tire & Rubber Co. Tire. 230,533, 2–26–74, Cl. D90—20.
Xerox Corp. : *See*—
Hutcheson, Claude H., and Zinni. 230,515.
Kalvitis, Robert E. 230,517.
Patla, Jacob W., and Schachner. 230,513.
Yamagami, Masafumi, to Shark Kabushiki Kaisha. Electronic calculating machine. 230,484, 2–26–74, Cl. D26—5.
Yanagawa, Nobuyuki, to Kabushiki Kaisha Ricoh. Film holder. 230,516, 2–26–74, Cl. D61—1.
Yazawa, Hiroaki : *See*—
Okabe, Ken, and Yazawa. 230,507.
Zeleniak, John : *See*—
Matichak, William, and Zeleniak. 230,500.
Zinni, John F. : *See*—
Hutcheson, Claude H., and Zinni. 230,515.

# CLASSIFICATION OF PATENTS

## ISSUED FEBRUARY 26, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

**CLASS 2**
2.5 3,793,648
49 3,793,644
66 3,793,643
221 3,793,645
224R 3,793,649
227 3,793,646
266 3,793,647

**CLASS 3**
1 3,793,650

**CLASS 4**
172 3,793,653
172.19 3,793,651
179 3,793,654

**CLASS 5**
63 3,793,652
296 3,793,655

**CLASS 7**
8 3,793,656

**CLASS 8**
21C 3,794,463
52 3,794,466
115.6 3,794,465
165 3,794,464

**CLASS 9**
8R 3,793,657

**CLASS 10**
1B 3,793,659
86F 3,793,658

**CLASS 11**
1AC 3,793,660

**CLASS 12**
14.5 3,793,661

**CLASS 14**
71 3,793,662

**CLASS 15**
21D 3,793,663
21E 3,793,667
50C 3,793,664
180 3,793,665
210R 3,793,668
250.01 3,793,671
250.04 3,793,666
3,793,670
250.22 3,793,669

**CLASS 16**
2 3,793,672
97 3,793,673
126 3,793,674

**CLASS 17**
45 3,793,676
59 3,793,675

**CLASS 19**
106R 3,793,680
113 3,793,677
156.3 3,793,678
3,793,679

**CLASS 23**
230R 3,794,467
258.5 3,794,468
272.6S 3,794,470
282 Re.27,929
285 3,794,471
292 3,794,469

**CLASS 24**
60 3,793,681
134P 3,793,682
205.1R 3,793,683
205.14 3,793,684
230AN 3,793,685

**CLASS 28**
75R 3,793,686

**CLASS 29**
6 3,793,687
33.5 3,793,688
116R 3,793,689
157C 3,793,690
163.5F 3,793,692
182 3,793,691
201 3,793,697
203H 3,793,693
205R 3,793,694
211R 3,793,695
212P 3,793,696
256 3,793,718
401 3,793,698
408 3,793,719
415 3,793,699
419 3,793,700
421 3,793,701
426 3,793,702
463 3,793,703
470.1 3,793,704
473.1 3,793,705
559 3,793,706
563 3,793,707
568 3,793,708
571 3,793,721
577 3,793,710
3,793,712
583 3,793,713
3,793,714
588 3,793,709
592 3,793,715
595 3,793,711
610 3,793,717
611 3,793,716
626 3,793,720

**CLASS 30**
6.1 3,793,722
41 3,793,724
45 3,793,723
63 3,793,725
151 3,793,726
383 3,793,727

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6 3,793,728
14A 3,793,730
23 3,793,729

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1PT 3,793,731
137R 3,793,732
166 3,793,733
180R 3,793,738
203.12 3,793,734
203.17 3,793,736
286 3,793,739
300 3,793,737
348 3,793,735

**CLASS 34**
10 3,793,740
48 3,793,741
57A 3,793,743
57R 3,793,742
104 3,793,744
189 3,793,745

**CLASS 36**
2.5AL 3,793,747
3,793,749
2.5R 3,793,746
9R 3,793,748
59C 3,793,750
61 3,793,751

**CLASS 37**
42R 3,793,752

**CLASS 38**
77.6 3,793,753
141 3,793,754

**CLASS 40**
102 3,793,758
132E 3,793,755
142 3,793,757
306 3,793,756

**CLASS 42**
1K 3,793,759

**CLASS 43**
4.5 3,793,760
26.1 3,793,761
124 3,793,762
129 3,793,763

**CLASS 44**
6 3,794,472
63 3,794,473

**CLASS 46**
1R 3,793,768
40 3,793,764
74A 3,793,765
189 3,793,767
232 3,793,766
243MV 3,793,769

**CLASS 47**
1.3 3,793,770
44 3,793,771

**CLASS 49**
28 3,793,772
44 3,793,773

**CLASS 51**
5 3,793,779
12 3,793,778
3,793,785
14 3,793,780
117 3,793,774
165.77 3,793,775
170MT 3,793,776
170PT 3,793,782
170TL 3,793,781
206.5 3,793,783
233 3,793,777
249 3,793,792
269 3,793,784
295 3,794,474

**CLASS 52**
61 3,793,795
79 3,793,796
157 3,793,786
163 3,793,787
211 3,793,788
221 3,793,793
393 3,793,790
463 3,793,789
615 3,793,791
632 3,793,794

**CLASS 53**
29 3,793,797
30 3,793,798
32 3,793,799
341 3,793,800

**CLASS 55**
49 3,793,805
71 3,793,801
72 3,793,806
89 3,793,808
91 3,793,809
93 3,793,807
112 3,793,804
155 3,793,802
218 3,793,803
255 3,793,810
294 3,793,811
338 3,793,812
481 3,793,813

**CLASS 56**
1 3,793,814
328TS 3,793,815

**CLASS 57**
34HS 3,793,817
52 3,793,818
58.52 3,793,819
58.89 3,793,820
95 3,793,821
140BY 3,793,822
163 3,793,823
164 3,793,816

**CLASS 58**
91 3,793,824

**CLASS 60**
39.14R 3,793,825
3,793,826
39.65 3,793,827
39.66 3,793,828
203 3,793,832
261 3,793,838
284 3,793,833
288 3,793,830
413 3,793,834
3,793,835
471 3,793,831
521 3,793,836
527 3,793,837
547 3,793,829

**CLASS 61**
35 3,793,839
36R 3,793,841
46 3,793,843
46.5 3,793,840
3,793,842
63 3,793,844
72.1 3,793,845

**CLASS 62**
6 3,793,846
190 3,793,847
315 3,793,861
402 3,793,848

**CLASS 64**
13 3,793,849

**CLASS 65**
5 3,794,475
116 3,794,476
158 3,794,477

**CLASS 66**
50A 3,793,853
50R 3,793,850
152 3,793,852
185 3,793,851

**CLASS 68**
23.7 3,793,854
3,793,855

**CLASS 70**
38A 3,793,856
368 3,793,857
457 3,793,858

**CLASS 71**
1 3,794,478
9 3,794,479
122 3,794,480

**CLASS 72**
4 3,793,862
8 3,793,859
11 3,793,860
84 3,793,863
88 3,793,866
136 3,793,864
197 3,793,865
201 3,793,867
226 3,793,868
236 3,793,869
255 3,793,870
318 3,793,873
349 3,793,871
422 3,793,872

**CLASS 73**
12 3,793,874
37.5 3,793,875
46 3,793,876
49.3 3,793,877
88.5R 3,793,878
95 3,793,879
100 3,793,880
102 3,793,881
113 3,793,882
160 3,793,883
315 3,793,884
398C 3,793,885
421R 3,793,886
3,793,888
421.5R 3,793,887
425.4R 3,793,889
490 3,793,890
538 3,793,891

**CLASS 74**
18.2 3,793,892
22 3,793,893
50 3,793,902
55 3,793,894
63 3,793,895
89.15 3,793,896
199 3,793,897
335 3,793,898
397 3,793,899
413 3,793,900
473R 3,793,901
531 3,793,903
590 3,793,904
661 3,793,905
745 3,793,906
759 3,793,909
796 3,793,910
798 3,793,907
870 3,793,908

**CLASS 75**
20F 3,794,481
62 3,794,482
91 3,794,483
147 3,794,484

**CLASS 76**
107R 3,793,911

**CLASS 81**
52.3 3,793,912
57.18 3,793,913
378 3,793,914

**CLASS 83**
62 3,793,915
155 3,793,916
199 3,793,917
583 3,793,919
698 3,793,918

**CLASS 84**
1.01 3,794,747
1.24 3,794,748

**CLASS 86**
1R 3,793,920

**CLASS 89**
33CA 3,793,921
180 3,793,922

**CLASS 91**
487 3,793,924
488 3,793,923

**CLASS 92**
13.1 3,793,925

**CLASS 93**
1.1 3,793,928
33H 3,793,927
62 3,793,926
80 3,793,929

**CLASS 96**
3 3,794,485
35.1 3,794,494
37 3,794,486
41 3,794,492
48R 3,794,491
49 3,794,487
50R 3,794,488
66R 3,794,489
76C 3,794,490
84R 3,794,493
87A 3,794,495
99 Re.27,933
114.1 3,794,496
115P 3,794,497
124 3,794,498

**CLASS 98**
42 3,793,930
95 3,793,931
110 3,793,932

**CLASS 99**
282 3,793,934
283 3,793,933
295 3,793,935
339 3,793,936
355 3,793,937
408 3,793,940
450.6 3,793,938
483 3,793,939

**CLASS 100**
1 3,793,941
53 3,793,944
73 3,793,942
257 3,793,945
269R 3,793,943

**CLASS 101**
18 3,793,946
93MN 3,793,947
111 3,793,951
132.5 3,793,948
142 3,793,950
157 3,793,952
375 3,793,949

**CLASS 102**
22 3,793,953
28R 3,793,954
31 3,793,955
70.2P 3,793,958
70.2R 3,793,956
3,793,957

**CLASS 104**
1R 3,793,959
10 3,793,960
25 3,793,961
61 3,793,962
130 3,793,963
162 3,793,964
172S 3,793,965

**CLASS 105**
178 3,793,966

**CLASS 106**
15AF 3,794,501
52 3,794,502
87 3,794,504
90 3,794,506
119 3,794,505
288B 3,794,503
299 3,794,507
3,794,508

**CLASS 111**
7 3,793,967

**CLASS 112**
121.29 3,793,968
235 3,793,969

**CLASS 113**
1G 3,793,971
1H 3,793,970
113 3,793,972

**CLASS 114**
39 3,793,973
43.5 3,793,974
65A 3,793,975
74A 3,793,976
208 3,793,977
221A 3,793,978

**CLASS 115**
.5R 3,793,979
39 3,793,980
41HT Re.27,932

**CLASS 116**
28R 3,793,981
60 3,793,982

**CLASS 117**
4 3,794,509
8 3,794,510
22 3,794,511
33.5R 3,794,512
34 3,794,513
46FS 3,794,514
107 Re.27,930
145 3,794,515
217 3,794,516
3,794,517
227 3,794,518
230 3,794,520
235 3,794,519

**CLASS 118**
7 3,793,983
48 3,793,984
637 3,793,985
3,793,986

**CLASS 119**
1 3,793,987
3,793,988
3,793,989
56R 3,793,990

**CLASS 122**
6A 3,793,991
20B 3,793,992
33 3,793,993
52 3,793,994
235B 3,793,995

**CLASS 123**
8.09 3,793,996
41.15 3,793,997
43R 3,793,998
44.05 3,794,001
90.11 3,794,002
90.67 3,793,999
97B 3,794,003
3,794,004
119A 3,794,006
119R 3,794,005
122D 3,794,007
133 3,794,000
148DS 3,794,008
179F 3,794,009

196R 3,794,010

**CLASS 124**

1 3,794,011
24R 3,794,012

**CLASS 126**

40 3,794,013
110AA 3,794,014
360A 3,794,015
369 3,794,016

**CLASS 127**

5 3,794,521

**CLASS 128**

2.1R 3,794,017
58 3,794,018
68 3,794,023
77 3,794,019
79 3,794,020
130 3,794,025
142.2 3,794,021
145.8 3,794,026
188 3,794,027
202 3,794,030
214R 3,794,032
216 3,794,028
230 3,794,031
284 3,794,033
285 3,794,024
3,794,029
287 3,794,038
290R 3,794,034
300 3,794,035
303.1 3,794,039
3,794,040
348 3,794,041
349BV 3,794,043
349R 3,794,042
351 3,794,036
352 3,794,044
419P 3,794,045
422 3,794,022
597 3,794,037

**CLASS 130**

27T 3,794,046
3,794,047

**CLASS 131**

94 3,794,048
135 3,794,049

**CLASS 132**

5 3,794,933
11A 3,794,050

**CLASS 134**

1 3,794,522
3 3,794,523
31 3,794,524
46 3,794,051
141 3,794,053
167R 3,794,052

**CLASS 135**

2 3,794,054

**CLASS 136**

108 3,794,525
205 3,794,526
208 3,794,527

**CLASS 137**

1 3,794,055
14 3,794,060
68 3,794,057
82 3,794,058
93 3,794,059
115 3,794,076
117 3,794,065
312 3,794,066
330 3,794,061
343 3,794,067
486 3,794,069
487.5 3,794,070
488 3,794,062
497 3,794,068
505.26 3,794,063
513.3 3,794,077
561A 3,794,056
599.2 3,794,071
604 3,794,072
608 3,794,073
615 3,794,064
625.4 3,794,074
625.66 3,794,075

**CLASS 138**

30 3,794,078
103 3,794,079
121 3,794,080
141 3,794,081

**CLASS 139**

54 3,794,083
55 3,794,082
185 3,794,085
369 3,794,084

**CLASS 140**

93.2 3,794,086

**CLASS 141**

131 3,794,087
237 3,794,088

**CLASS 144**

1C 3,794,089

**CLASS 148**

6.15R 3,794,529
12.7 3,794,528
31.55 3,794,530
142 3,794,532
159 3,794,531
175 3,794,533

**CLASS 149**

2 3,794,534
3 3,794,535

**CLASS 150**

.5 3,794,090
52R 3,794,091

**CLASS 151**

22 3,794,092

**CLASS 152**

208 3,794,093
213 3,794,094
239 3,794,095
243 3,794,096
356 3,794,097
428 3,794,098

**CLASS 156**

11 3,794,536
62.8 3,794,537
169 3,794,540
187 3,794,538
189 3,794,708
228 3,794,541
230 3,794,544
309 3,794,539
344 3,794,546
358 3,794,542
519 3,794,545
566 3,794,543

**CLASS 159**

48R 3,794,099

**CLASS 161**

1 3,794,547
43 3,794,549
58 3,794,551
89 3,794,548
109 3,794,554
147 3,794,550
148 3,794,553
185 3,794,555
206 3,794,556
232 3,794,552

**CLASS 162**

157C 3,794,557
175 3,794,558

**CLASS 164**

57 3,794,100
68 3,794,101
82 3,794,102
182 3,794,103
252 3,794,104
260 3,794,105
277 3,794,106
282 3,794,107
283S 3,794,108

**CLASS 165**

1 3,794,111
8 3,794,109
90 3,794,118
164 3,794,110

**CLASS 166**

64 3,794,112
245 3,794,113
249 3,794,114
259 3,794,116
294 3,794,115
307 3,794,117

**CLASS 168**

18 3,794,119
24 3,794,120

**CLASS 172**

21 3,794,121
66 3,794,122
624 3,794,123

**CLASS 173**

104 3,794,124

**CLASS 174**

28 3,794,749
36 3,794,750
40R 3,794,751
115 3,794,752

**CLASS 175**

6 3,794,125
58 3,794,127
73 3,794,128
173 3,794,126
391 3,794,129

**CLASS 176**

81 3,794,560
87 3,794,559

**CLASS 177**

137 3,794,130

**CLASS 178**

5.4CD 3,794,755
3,794,756
5.4P 3,794,754
6.8 3,794,758
3,794,762
7.2 3,794,761
58 3,794,757
68 3,794,759
69.5TV 3,794,760

**CLASS 179**

1GQ 3,794,781
1SA 3,794,753
1SW 3,794,765
1VC 3,794,763
1P 3,794,766
2A 3,794,764
6R 3,794,767
6.3R 3,794,770
15BA 3,794,768
15BL 3,794,771
15BS 3,794,773
16EA 3,794,775
16EC 3,794,772
18GF 3,794,777
81R 3,794,774
99 3,794,776
100.1C 3,794,778
100.4ST 3,794,780
156R 3,794,779
170R 3,794,782
175.2C 3,794,783

**CLASS 180**

5R 3,794,131
13 3,794,132
65R 3,794,133
79.2B 3,794,134
82 3,794,135
91 3,794,136

**CLASS 181**

33E 3,794,137
48 3,794,138
56 3,794,139

**CLASS 182**

92 3,794,140
202 3,794,141

**CLASS 184**

6.5 3,794,142

**CLASS 188**

4R 3,794,144
79.5P 3,794,145
181A 3,794,143
195 3,794,146

**CLASS 192**

3G 3,794,147

**CLASS 194**

4C 3,794,148
13 3,794,149

**CLASS 195**

29R 3,794,561
63 3,794,563
66R 3,794,562
80R 3,794,564

**CLASS 197**

55 3,794,150

**CLASS 198**

19 3,794,151
20 3,794,152
34 3,794,154
131 3,794,157
136 3,794,156
194 3,794,155
233 3,794,158
270 3,794,153

**CLASS 200**

11A 3,794,784
44 3,794,796
61.27 3,794,785
61.45R 3,794,786
61.53 3,794,794
61.89 3,794,787
61.93 3,794,791
67D 3,794,788
83Z 3,794,789
86R 3,794,790
153SC 3,794,792
153G 3,794,798
3,794,799
293 3,794,795
308 3,794,800

**CLASS 202**

100 3,794,565
160 3,794,566

**CLASS 203**

8 3,794,567
67 3,794,568

**CLASS 204**

1T 3,794,569
51 3,794,570
56R 3,794,572
94 3,794,571
159 3,794,573
159.11 3,794,576
181 3,794,593
195P 3,794,575
197 3,794,574
219 3,794,577
305 3,794,578

**CLASS 206**

45.19 3,794,793
173 3,794,210

**CLASS 208**

40 3,794,579
110 3,794,580

**CLASS 209**

12 3,794,159
90 3,794,160
106 3,794,161
172.5 3,794,162
223 3,794,163
243 3,794,164
301 3,794,166
325 3,794,165

**CLASS 210**

9 3,794,581
11 3,794,582
23 3,794,583
24 3,794,584
84 3,794,167
90 3,794,168
136 3,794,170
140 3,794,169
205 3,794,171
242 3,794,175
3,794,176
257 3,794,172
3,794,173
321 3,794,174
377 3,794,177
404 3,794,178
409 3,794,179
445 3,794,180

**CLASS 211**

65 3,794,181
94 3,794,182
176 3,794,183

**CLASS 212**

46A 3,794,184
105 3,794,185

**CLASS 214**

1H 3,794,186
14 3,794,187
17CA 3,794,190
17DA 3,794,188
18SC 3,794,189
75G 3,794,193
75H 3,794,192
83.36 3,794,194
145 3,794,195
302 3,794,197
390 3,794,196
519 3,794,198
763 3,794,199
774 3,794,191

**CLASS 215**

9 3,794,200
3,794,201
22 3,794,202

**CLASS 219**

10.55 3,794,797
3,794,801
10.79 3,794,802
61 3,794,803
121EM 3,794,807
121P 3,794,806
137 3,794,804
152 3,794,805
203 3,794,809
366 3,794,810
497 3,794,808
501 3,794,811

**CLASS 220**

5A 3,794,203
24.5 3,794,204
27 3,794,206
29 3,794,205
36 3,794,207
66 3,794,208
72 3,794,209
89A 3,794,211

**CLASS 221**

212 3,794,212
310 3,794,214

**CLASS 222**

1 3,794,215
3,794,218
70 3,794,216
107 3,794,213
108 3,794,219
153 3,794,220
174 3,794,217
190 3,794,221
207 3,794,222
218 3,794,234
471 3,794,235
529 3,794,223

**CLASS 223**

37 3,794,224
88 3,794,225

**CLASS 224**

5R 3,794,226
42.01 3,794,227

**CLASS 225**

93 3,794,228

**CLASS 226**

3 3,794,230
25 3,794,229
36 3,794,231
50 3,794,232
183 3,794,233

**CLASS 227**

111 3,794,237

**CLASS 228**

1 3,794,236

**CLASS 229**

44CB 3,794,238
52B 3,794,239

**CLASS 232**

35 3,794,240

**CLASS 233**

26 3,794,241

**CLASS 235**

61.11E 3,794,812
61.7B 3,794,813
92MP 3,794,814
92WT 3,794,815
150.1 3,794,817
152 3,794,816
153AM 3,794,818
3,794,819
3,794,821
164 3,794,820

**CLASS 237**

59 3,794,242

**CLASS 239**

3 3,794,243
206 3,794,245
265.33 3,794,246
265.41 3,794,244
327 3,794,247
533 3,794,248
539 3,794,249

**CLASS 240**

1.3 3,794,822
4.2 3,794,828
10.1 3,794,823
10.6R 3,794,824
10.63 3,794,825
84 3,794,826
106R 3,794,829
147 3,794,830

**CLASS 241**

21 3,794,250
65 3,794,251

**CLASS 242**

38 3,794,252
55 3,794,268
55.16 3,794,254
55.2 3,794,253
56A 3,794,256
56R 3,794,255
67.1R 3,794,257
68.3 3,794,265
71.2 3,794,259
71.8 3,794,258
84.2R 3,794,264
107.4 3,794,266
125.1 3,794,260
127 3,794,263
131 3,794,261
156.2 3,794,267
194 3,794,269

**CLASS 244**

1SD 3,794,270
3.15 3,794,271
3.17 3,794,272
7A 3,794,273
41 3,794,275
78 3,794,276
130 3,794,274

**CLASS 246**

33R 3,794,832
63C 3,794,833
187B 3,794,834

**CLASS 248**

20 3,794,277
27 3,794,278
44 3,794,279
99 3,794,28[illegible]
188 3,794,281
244 3,794,282
276 3,794,283
311 3,794,285
441 3,794,284

**CLASS 249**

67 3,794,286
106 3,794,262
3,794,287

**CLASS 250**

199 3,794,841
211J 3,794,835
315 3,794,842
324 3,794,839
351 3,794,838
359 3,794,843
363 3,794,836
3,794,840
366 3,794,837
370 3,794,844

**CLASS 251**

31 3,794,292
62 3,794,288
130 3,794,293
145 3,794,294
149.7 3,794,289
171 3,794,291
189 3,794,295
309 3,794,297
347 3,794,290

**CLASS 252**

28 3,794,585
42.1 3,794,595
51.5R 3,794,586
62.1 3,794,594
89 3,794,605
107 3,794,587
110 3,794,589
170 3,794,590
178 3,794,591
180 3,794,596
182 3,794,592
301.4S 3,794,597
355 3,794,601
389R 3,794,603
412 3,794,602
431C 3,794,604
455Z 3,794,598
3,794,600
462 3,794,588
466PT 3,794,599

**CLASS 254**

8B 3,794,296
185R 3,794,298

**CLASS 259**

4 3,794,299
3,794,300
7 3,794,301
102 Re.27,931

**CLASS 260**

4R 3,794,606
18N 3,794,631
29.6RW 3,794,608
29.6TA 3,794,607
30.4EP 3,794,609
31.6 3,794,610
33.6AO 3,794,611
33.6UA 3,794,613
33.6A 3,794,634
37SB 3,794,612
45.7P 3,794,615
3,794,616
45.75B 3,794,614
45.8A 3,794,629
47CB 3,794,618
47EP 3,794,619
47C 3,794,617
75NH 3,794,621
78L 3,794,624
3,794,625
78.4E 3,794,623
78.5BB 3,794,622
78.5T 3,794,626
88.2R 3,794,627
94.7A 3,794,638
94.9B 3,794,628
112R 3,794,630
112.5 3,794,632
3,794,633
210E 3,794,635
239B 3,794,645
239.3A 3,794,647
239.3B 3,794,639
239.3T 3,794,644
3,794,646
247.1 3,794,636
247.7H 3,794,640
249.8 3,794,641
251R 3,794,642
256.4F 3,794,637
260 3,794,643
268BC 3,794,651
270R 3,794,648
3,794,649
284 3,794,655

286A 3,794,650
290R 3,794,656
293.69 3,794,652
294.8G 3,794,657
295.5A 3,794,654
296R 3,794,653
302H 3,794,658
305 3,794,659
306.7 3,794,660
306.8D 3,794,665
308R 3,794,661
335 3,794,663
343.3 3,794,666
345.9 3,794,662
348A 3,794,664
396R 3,794,667
3,794,668
397.2 3,794,669
429R 3,794,671
429.7 3,794,670
448.2B 3,794,673
448.2N 3,794,672
465B 3,794,674
468D 3,794,675
471C 3,794,676
477 3,794,677
514H 3,794,680
514L 3,794,678
519 3,794,681
544Y 3,794,679
561N 3,794,682
562B 3,794,683
565 3,794,685
566AE 3,794,684
566A 3,794,620
595 3,794,686
607A 3,794,687
614F 3,794,688
618E 3,794,689
677A 3,794,690
677R 3,794,692
683.43 3,794,691
823 3,794,693
827 3,794,694
863 3,794,695
876R 3,794,697
897A 3,794,696
897R 3,794,698
938 3,794,699
973 3,794,701
986 3,794,700
3,794,702
990 3,794,703

**CLASS 261**

36A 3,794,302
61 3,794,303
111 3,794,304
114A 3,794,305
116 3,794,306

**CLASS 264**

1 3,794,704
37 3,794,705
45 3,794,706
56 3,794,707
323 3,794,709

**CLASS 266**

32 3,794,307
41 3,794,308

**CLASS 267**

34 3,794,309
139 3,794,310
156 3,794,312
158 3,794,311

**CLASS 269**

21 3,794,314
56 3,794,315
322 3,794,313

**CLASS 272**

60 3,794,316
86 3,794,317

**CLASS 273**

1B 3,794,318
22 3,794,319
29A 3,794,320
54R 3,794,321
95R 3,794,322
97R 3,794,323
101 3,794,324
3,794,325
131KC 3,794,326
148R 3,794,327
167E 3,794,328
191A 3,794,329

**CLASS 274**

1G 3,794,330
10R 3,794,332
10S 3,794,331

**CLASS 277**

180 3,794,333
235A 3,794,334

**CLASS 279**

23 3,794,335

**CLASS 280**

11.13B 3,794,336
11.35M 3,794,339
11.35T 3,794,337
3,794,338
15 3,794,340
21R 3,794,341
106 3,794,348
106.5R 3,794,342
124A 3,794,343
124F 3,794,344
150AB 3,794,346
3,794,347
3,794,349
163 3,794,345
179R 3,794,350
204 3,794,351
209 3,794,352
291 3,794,353
478R 3,794,354
482 3,794,355
513 3,794,356
515 3,794,357

**CLASS 285**

47 3,794,358
55 3,794,359
256 3,794,360
336 3,794,361
340 3,794,362
363 3,794,363
390 3,794,364

**CLASS 290**

38R 3,794,845

**CLASS 292**

62 3,794,365
251.5 3,794,366

**CLASS 293**

88 3,794,367

**CLASS 294**

5 3,794,368
31.2 3,794,370
90 3,794,371
96 3,794,369

**CLASS 296**

1S 3,794,372
28A 3,794,373
3,794,374
36 3,794,375
137R 3,794,376
146 3,794,377

**CLASS 297**

219 3,794,378
250 3,794,379
379 3,794,380
430 3,794,381
457 3,794,382

**CLASS 298**

1SG 3,794,383

**CLASS 301**

5R 3,794,384
37P 3,794,385

**CLASS 302**

10 3,794,387
58 3,794,388
60 3,794,386

**CLASS 303**

21P 3,794,389

**CLASS 307**

43 3,794,851
87 3,794,846
117 3,794,847
129 3,794,848
137 3,794,850
147 3,794,849
205 3,794,856
233 3,794,853
238 3,794,854
3,794,859
247 Re.27,928
272 3,794,860
290 3,794,855
293 3,794,857
3,794,858
297 3,794,861
304 3,794,862
309 3,794,864
310 3,794,863

**CLASS 308**

3R 3,794,390
10 3,794,391
36.1 3,794,392
207 3,794,393

**CLASS 310**

8.2 3,794,866
9.1 3,794,867
36 3,794,868
82 3,794,865
90 3,794,869
180 3,794,870

**CLASS 312**

19 3,794,394
209 3,794,395
214 3,794,396
231 3,794,397
241 3,794,398
244 3,794,399
269 3,794,400
323 3,794,401

**CLASS 313**

60 3,794,872
61S 3,794,875
68R 3,794,871
85S 3,794,873
102 3,794,874

**CLASS 315**

17 3,794,876
27TD 3,794,877
30 3,794,878
39.71 3,794,879
47 3,794,880
84.6 3,794,881
100 3,794,882

**CLASS 316**

14 3,794,402
30 3,794,403

**CLASS 317**

18D 3,794,884
27R 3,794,889
33SC 3,794,885
100 3,794,886
101DH 3,794,887
150 3,794,888
234R 3,794,883
235R 3,794,890
3,794,891
3,794,892

**CLASS 318**

138 3,794,893
184 3,794,894
254 3,794,895
270 3,794,897
380 3,794,898
471 3,794,896
602 3,794,899
603 3,794,900
627 3,794,901
630 3,794,902
696 3,794,903

**CLASS 320**

20 3,794,905
25 3,794,904

**CLASS 321**

2 3,794,906
16 3,794,907
27R 3,794,908

**CLASS 324**

30R 3,794,910
32 3,794,909
61QS 3,794,911
62 3,794,912
65P 3,794,913
95 3,794,914
99D 3,794,916
111 3,794,915
142 3,794,917
186 3,794,918

**CLASS 325**

38B 3,794,919
42 3,794,921
53 3,794,922
105 3,794,920
185 3,794,852
308 3,794,923
439 3,794,924
470 3,794,925

**CLASS 328**

104 3,794,926
233 3,794,927

**CLASS 329**

104 3,794,928

**CLASS 330**

4.3 3,794,929
10 3,794,930
29 3,794,931

**CLASS 331**

110 3,794,932

**CLASS 332**

16T 3,794,934

**CLASS 333**

17 3,794,941
28R 3,794,935
3,794,936
30R 3,794,937
70R 3,794,938
72 3,794,939
77 3,794,940

**CLASS 334**

15 3,794,942

**CLASS 335**

69 3,794,943
154 3,794,944
188 3,794,945
211 3,794,946

**CLASS 337**

32 3,794,947
242 3,794,948

**CLASS 338**

22R 3,794,949
23 3,794,950

**CLASS 339**

4 3,794,951
5P 3,794,952
17C 3,794,953
19 3,794,954
21R 3,794,955
34 3,794,956
49R 3,794,957
94R 3,794,958
103M 3,794,959
107 3,794,960
108R 3,794,961
126R 3,794,962
242 3,794,963

**CLASS 340**

1R 3,794,964
7PC 3,794,965
15.5BH 3,794,976
15.5TC 3,794,827
31R 3,794,966
52R 3,794,968
3,794,969
53 3,794,971
62 3,794,972
63 3,794,967
146.1BE 3,794,973
146.2 3,794,974
146.3F 3,794,975
163 3,794,977
170 3,794,978
171R 3,794,985
172.5 3,794,831
3,794,970
3,794,979
3,794,980
3,794,981
3,794,982
3,794,983
3,794,984
173CH 3,794,986
174TF 3,794,988
280 3,794,989
336 3,794,990
409 3,794,991

**CLASS 343**

5DP 3,794,993
3,794,994
3,794,995
5PD 3,794,992
7ED 3,794,997
7A 3,794,996
16M 3,794,998
17.7 3,794,999
113R 3,795,000
119 3,795,001
754 3,795,002
3,795,003
761 3,795,004
895 3,795,005

**CLASS 346**

7 3,795,006
32 3,795,007
33R 3,795,008
74ES 3,795,010
74M 3,795,009
74P 3,795,011
76R 3,795,012
136 3,795,013

**CLASS 350**

3.5 3,794,412
81 3,794,404
160LC 3,794,405
160R 3,794,413
162SF 3,794,406
162R 3,794,408
171 3,794,407
194 3,794,409
285 3,794,410
302 3,794,411

**CLASS 351**

161 3,794,414

**CLASS 352**

92 3,794,416
184 3,794,415

**CLASS 355**

3 3,794,417
3,794,418
45 3,794,421
67 3,794,422
75 3,794,423
78 3,794,420
91 3,794,419

**CLASS 356**

30 3,794,424
51 3,794,425
98 3,794,426
120 3,794,427
124 3,794,429
156 3,794,428
226 3,794,430
256 3,794,431

**CLASS 360**

43 3,794,987
109 3,794,769

**CLASS 401**

262 3,794,432

**CLASS 404**

1 3,794,433

**CLASS 408**

56 3,794,434
59 3,794,435
124 3,794,436
146 3,794,437
231 3,794,438

**CLASS 415**

54 3,794,439
88 3,794,440
90 3,794,449
122 3,794,456

**CLASS 416**

145 3,794,442
152 3,794,441
175 3,794,443
201 3,794,444
241 3,794,445

**CLASS 417**

61 3,794,446
356 3,794,447
406 3,794,448

**CLASS 418**

117 3,794,450

**CLASS 423**

139 3,794,719
220 3,794,710
224 3,794,711
242 3,794,714
251 3,794,715
253 3,794,716
338 3,794,712
3,794,713
512 3,794,718
515 3,794,738
594 3,794,720
598 3,794,717

**CLASS 424**

78 3,794,736
120 3,794,721
147 3,794,722
200 3,794,723
3,794,724
3,794,730
249 3,794,726
270 3,794,725
3,794,727
273 3,794,728
3,794,737
283 3,794,732
300 3,794,733
330 3,794,734
337 3,794,729

**CLASS 425**

4 3,794,451
15 3,794,452
28R 3,794,457
270 3,794,453
353 3,794,458
387B 3,794,454
403 3,794,455

**CLASS 426**

8 3,794,739
69 3,794,740
72 3,794,499
156 3,794,741
276 3,794,731
302 3,794,742
364 3,794,735
417 3,794,743
424 3,794,744
439 3,794,745
479 3,794,746
511 3,794,500

**CLASS 431**

5 3,794,459
37 3,794,460

**CLASS 432**

29 3,794,461
80 3,794,462

## CLASSIFICATION OF DESIGNS

D02— 27 230,436
234 230,437
230,438
230,439
279 230,440
381 230,441
D03— 32E 230,442
D06— 30 230,443
37 230,444
85 230,445
186 230,446
193 230,447
194 230,448
230,449
230,450
195 230,451
196 230,452
198 230,453
201 230,454
230,455
212 230,456
D07— 9 230,457
95 230,459
230,460
97 230,461
187 230,462
203 230,458
207 230,463
D08— 44 230,464
230,465
45 230,466
55 230,467
107 230,468
274 230,469
D09— 158 230,470
182 230,471
258 230,472
D12— 70 230,473
71 230,474
101 230,475
187 230,476
230,477
D18— 2A 230,478
D22— 26 230,479
D23— 19 230,480
32 230,481
150 230,482
D26— 5C 230,484
R 230,483
230,485
13R 230,486
14A 230,487
B 230,488
G 230,489

## CLASSIFICATION OF DESIGNS

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D34— | 2R | 230,490 | D40— | 5 | 230,498 | | H | 230,506 | | T | 230,512 | D83— | S | 230,522 | | R | 230,529 |
| | 3 | 230,491 | D45— | 16A | 230,499 | D56— | 4B | 230,507 | D64— | 11A | 230,510 | | 12A | 230,523 | | | 230,530 |
| | 5CH | 230,494 | D48— | 2 | 230,500 | | R | 230,508 | | R | 230,517 | D85— | 2H | 230,524 | D88— | 4 | 230,531 |
| | GT | 230,492 | | 32A | 230,501 | | | 230,509 | D69— | 1 | 230,511 | | | 230,525 | D90— | 20R | 230,532 |
| | 15A | 230,496 | D52— | 4 | 230,502 | D61— | 1B | 230,514 | D71— | P | 230,518 | D87— | 1B | 230,526 | | | 230,533 |
| | T | 230,495 | D54— | 1 | 230,503 | | Q | 230,513 | D72— | A | 230,519 | | D | 230,527 | D92— | 15 | 230,534 |
| D35— | 3A | 230,493 | | 4 | 230,504 | | | 230,515 | D74— | | 230,520 | | | 230,528 | D95— | 3A | 230,535 |
| | R | 230,497 | D55— | 1C | 230,505 | | | 230,516 | | C | 230,521 | | | | | | |

## CLASSIFICATION OF PLANTS

| | | | | | | | | | | | | | | | | | |
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| P. — | 18 | 3,492 | P. — | 54 | 3,493 | P. — | | 3,495 | P. — | 68 | 3,498 | P. — | 75 | 3,500 | P. — | 88 | 3,491 |
| P. — | 34 | 3,496 | P. — | | 3,494 | P. — | 67 | 3,497 | P. — | 74 | 3,499 | | | | | | |

# GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)


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| 54 : 3,793,682 | 3,793,752 | 3,793,942 | 3,794,138 | 3,794,352 | 3,794,601 |
| 55 : 3,793,652 | 3,793,831 | 3,793,943 | 3,794,275 | 3,794,483 | 3,794,826 |
| 3,793,678 | 3,793,837 | 3,794,132 | 3,794,335 | | |

## DESIGN PATENTS

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|---|---|---|---|---|---|
| 6 : 230,436 | 230,448 | 230,479 | 25 : 230,440 | 230,460 | 37 : 230,524 |
| 230,442 | 230,449 | 230,493 | 230,485 | 230,461 | 39 : 230,494 |
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| 230,502 | 17 : 230,453 | 230,489 | 34 : 230,465 | 230,517 | 230,477 |
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| 8 : 230,455 | 230,463 | 19 : 230,503 | 230,511 | 230,526 | 44 : 230,456 |
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| 12 : 230,447 | 230,478 | 24 : 230,439 | 230,459 | 230,531 | 49 : 230,454 |

## PLANT PATENTS

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| 6 : 3,492 | 3,494 | 9 : 3,500 | 34 : 3,497 | 48 : 3,491 | 3,496 |
| 6 : 3,493 | 3,495 | 25 : 3,498 | | | |

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